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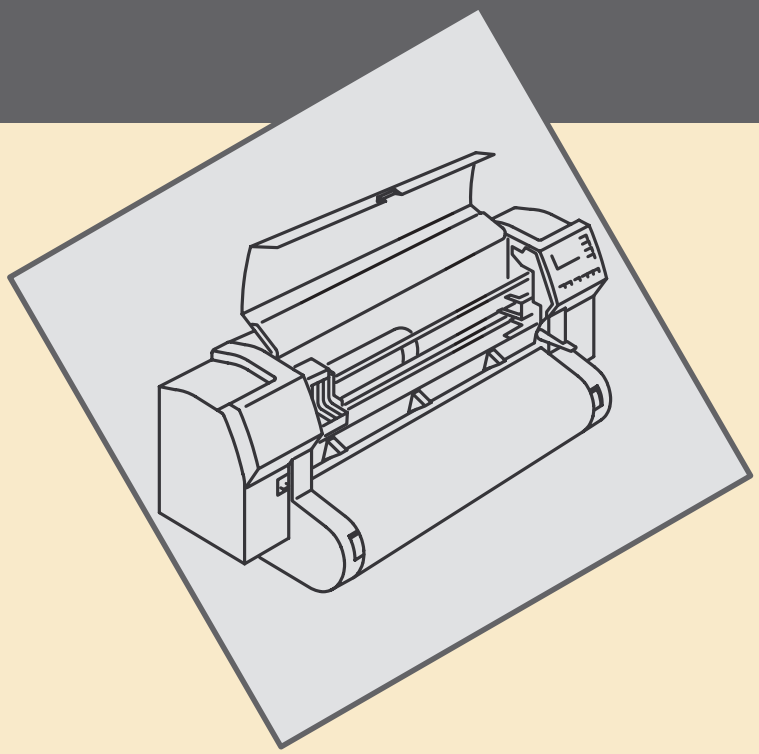

Service Manual

HP DesignJet 700, HP DesignJet 750C, HP DesignJet 750C Plus and HP DesignJet 755CM Plotters/Printers

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WARNING

The procedures described in this manual are to be performed by HP-qualified service personnel only.

Electrical Shock Hazard

Serious shock hazard leading to death or injury may result if you do not take the following precautions:

- Ensure that the ac power outlet (mains) has a protective earth (ground) terminal.
- Disconnect the plotter from the power source prior to performing any maintenance.
- Prevent water or other liquids from running onto electrical components or circuits, or through openings in the enclosure.

Electrostatic Discharge

Refer to the beginning of Chapter 6 of this manual, for precautions you should take to prevent damage to the plotter circuits from electrostatic discharge.

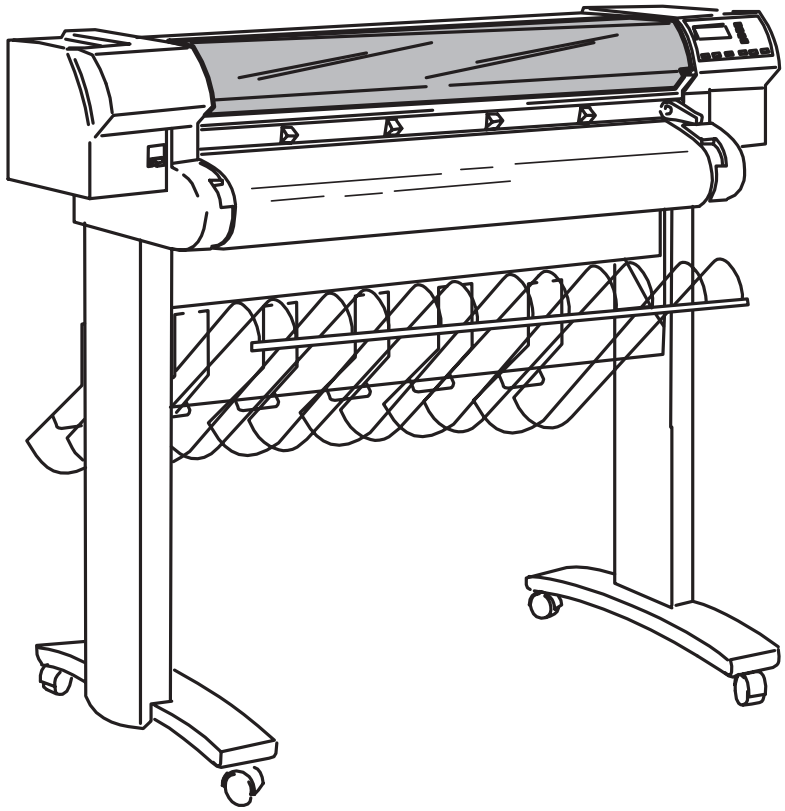
Safety Symbols

General definitions of safety symbols are given immediately after the table of contents.

Learning Products, Barcelona Division

Hewlett-Packard Española, S.A.
Avda. Graells, 501
08190 Sant Cugat del Vallès
Spain

Service Manual



HP DesignJet 700
HP DesignJet 750C
HP DesignJet 750C Plus and
HP DesignJet 755CM
Plotters/Printers

Using this Manual

Purpose

This manual contains information necessary to test, calibrate and service:

- HP DesignJet 700 plotters (models C4705A and C4706A)
- HP DesignJet 750C plotters (models C3195A and C3196A)
- HP DesignJet 750C Plus plotters (models C4708A and C4709A)
- HP DesignJet 755CM printers (models C3198A and C3198B)

For information about using these plotters/printers, refer to the corresponding user and quick-reference guides.

Readership

The procedures described in this manual are to be performed by HP-certified service personnel only.

Training

The HP ongoing training course CEV2-TIJ provides training for HP Customer Engineers and Authorized Dealers, on servicing the complete HP DesignJet series of large-format, thermal-inkjet plotters.

Part Numbers

Part numbers for plotter options, accessories and service parts are located in chapter 10.

Conventions

This manual contains information for the monochrome HP DesignJet 700 plotters, the color HP DesignJet 750C and 750C Plus plotters and the color HP DesignJet 755CM printers. To highlight the differences between the various plotters/printers the following symbols will be used in the left margin:

This symbol indicates the information specific only to a particular plotter/printer. The symbol will contain the name(s) of the plotter(s) that it is referring to.

750C *Plus* Example: This text is applicable only to the HP DesignJet 750C Plus.

All other information not marked by these symbols is applicable to all plotters.

The term **D/A1-size plotters** refers generically to models C4705A, C3195A and C4708A
The term **E/A0-size plotters** refers generically to models C4706A, C3196A, C4709A, C3198A and C3198B.

A small arrow ➧ is used to indicate other parts of the Service Manual or User's Guide where you can find information related to the topic you are consulting.

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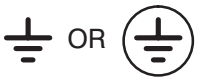
General Definition of Safety Symbols

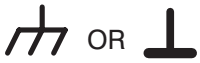
International caution symbol (refer to manual): the product is marked with this symbol when it is necessary for the user to refer to the instruction manual in order to protect against damage to the instrument.

Indicates dangerous voltage (terminals fed from the interior by voltage exceeding 1000 volts must also be marked).



Protective conductor terminal. For protection against electrical shock in case of a fault. Used with field wiring terminals to indicate the terminal that must be connected to ground before operating equipment.

Low-noise or noiseless, clean ground (earth) terminal. Used for a signal common, as well as providing protection against electrical shock in case of a fault. A terminal marked with this symbol must be connected to ground in the manner described in the installation (operating) manual, and before operating the equipment.



Frame or chassis terminal. A connection to the frame (chassis) of the equipment, which normally includes all exposed metal.

Alternating current

Direct current

Alternating or direct current

WARNING

The WARNING sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury.

Take care not to cut yourself on the encoder strip inside the plotter.

CAUTION

The CAUTION sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product.

1

Product Information

Description

Applications

The HP DesignJet 700 (monochrome), HP DesignJet 750C and 750C Plus (color) and HP DesignJet 750CM are large-format, ink-jet plotters/printers that print output from software applications, on paper and other media.

The plotters/printers produce large-format plots of high resolution and quality for the following sectors:

- Computer-aided design (CAD)
- Computer-aided manufacturing (CAM)
- Mapping
- Mechanical and architectural drawing
- General drafting

Drivers

Software drivers for the following applications are supplied with the plotters:

- AutoCAD for DOS
- AutoCAD for Windows
- MicroSoft Windows Applications

(Other application software ➧ User's Guide, chapter 1.)

Graphics Languages

The plotters accept drawing data in the following graphics languages:

- Hewlett-Packard Graphics Language (HP-GL), a vector language.
- HP-GL/2, an enhanced version of HP-GL.
- Hewlett-Packard Raster Transfer Language (HP-RTL), a raster language.

The plotters support HP-GL/2 with both the roman and the Japanese Kanji character sets (provided the Kanji ROM SIMM is fitted). PostScript is also available when the Postscript upgrade is fitted.

Device-Control Languages

The plotters support the following languages, enabling the user to read certain plotter settings from the computer:

- Printer Job Language (PJL)
- Printer Management Language (PML)

Interface

The plotter has both RS-232-C and Centronics/Bi-Tronics interfaces.

Network Connections

The following network operating systems are supported through an optional MIO external network interface:

- Novell Netware (Ethernet)
- LAN Manager
- Token Ring network
- Apple LocalTalk
- HP external controller
- TCP/ICP host work station
- Ethertalk

Memory

700

DesignJet 700 plotters have 5.5 MB of standard on-board RAM. A PostScript SIMM and an MIO card are optional. There are also two RAM expansion sockets, which can hold an optional 4MB, 8 MB, 16 MB or 32 MB single in-line memory module (SIMM). The maximum RAM is therefore 69.5 MB.

750C *Plus*

DesignJet 750C Plus plotters have 8 MB of standard on-board RAM, plus an additional 3 MB used internally. A PostScript SIMM and an MIO card are optional. There are also two RAM expansion sockets, which can hold an optional 4 MB, 8 MB, 16 MB or 32 MB single in-line memory module (SIMM). The maximum RAM is therefore 72 + 3 MB.

750C

DesignJet 750C plotters have 4 MB of standard on-board RAM, plus an additional 3 MB used internally. A PostScript SIMM and an MIO card are optional. There are also two RAM expansion sockets, which can hold an optional 4MB, 8 MB, 16 MB or 32 MB single in-line memory module (SIMM). The maximum RAM is therefore 68 + 3 MB.

755 CM

DesignJet 755CM printers (Model C3198A) have 4 MB of standard on-board RAM, plus an additional 3 MB used internally. In addition, the Postscript SIMM, the MIO card and two 32 MB SIMMs are pre-installed in the standard configuration. Therefore the total amount of useable RAM is 68 MB.

DesignJet 755CM printers (Model C3198B) have 8 MB of standard on-board RAM, plus an additional 3 MB used internally. In addition, the Postscript SIMM, the MIO card and two 32 MB SIMMs are pre-installed in the standard configuration. Therefore the total amount of useable RAM is 72 MB.

Accuracy

The accuracy of the plotters in drawing a vector is ± 0.38 mm (0.015 in) or ± 0.2% of the specified vector length, whichever is greater, at 23 °C (73 °F) at 50-60% relative humidity, on HP special polyester film.

Resolution

The resolution of the plotter output is measured in dots per inch (dpi). The plotter resolutions for different plot-quality settings are as follows:

750C 755 CM

Note: This table is for DesignJets 750C and 755CM (model C3198A).

Plot/Print Quality	Monochrome	Color
Fast	300 x 300 dpi	300 x 300 dpi, dot depleted
Normal	600 x 600 dpi	300 x 300 dpi
Best	600 x 600 dpi	300 x 300 dpi (But 600 x 600 dpi for black with HP RTL)

750C *Plus* 755 CM

Note: This table is for DesignJets 750C Plus and 755CM (model C3198B).

Plot/Print Quality	Monochrome	Color
Fast	300 x 300 dpi	300 x 300 dpi, dot depleted
Normal	600 x 600 dpi	300 x 300 dpi
Best	600 x 600 dpi	600 x 600 dpi addressable

700

Plot/Print Quality	Monochrome
Fast	300 x 300 dpi
Normal	600 x 600 dpi
Best	600 x 600 dpi

Media Types (See also ◗ HP Media Reference Guide)

Monochrome Plotting	Color Plotting
Plain paper and plotter paper	HP special inkjet paper
Plain vellum (HP preferred)	
Plain translucent paper (HP preferred)	
HP single-matte polyester film	

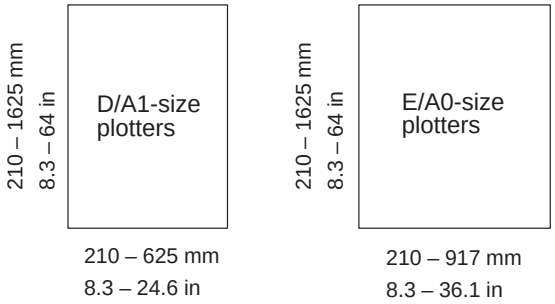
For additional media types available ◗ User's Guide, chapter 3, § *Choosing media.*

Media Sizes

The plotters handle sheet media and roll media. Supported standard sizes are as follows:

	D/A1-size plotters	E/A0-size plotters
ANSI	A, B, C, D	A, B, C, D, E
ISO	A4, A3, A2, A1	A4, A3, A2, A1, A0
Metric Oversize	A2, A1	A2, A1, A0
Architectural	C, D	C, D, E, E1
JIS	A4, A3, A2, A1 B4, B3, B2	A4, A3, A2, A1, A0 B4, B3, B2, B1, B0

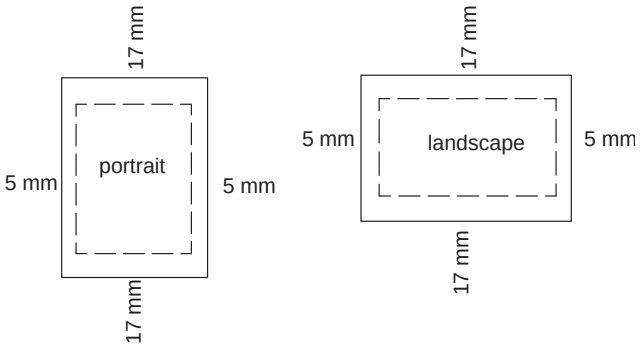
Sheet media must not exceed the maximum and minimum dimensions shown here:



Media Margins

The media margins define the real available plotting area on the media:

17 mm = 0.67 in
5 mm = 0.2 in
All measurements +/– 2mm (0.08 in)



Other Plotter Features

- Automatic media-edge sensing.
- Automatic cartridge alignment, testing and servicing.
- Built-in diagnostics and demonstration plots.
- Automatic media stacking with adjustable media bin.
- An automatic single-axis cutter.
- Queuing, nesting and expanded margin capabilities (not applicable to plotters/printers with the PostScript SIMM installed).
- Easy-to-read 2x30 vacuum fluorescent display (VFD).

Upgrading

An upgrade package, which can be installed by the user and which consists of an extra ROM and Postscript SIMMs is available.

The differences between this plotter/printer and previous ones are:

750C *Plus*

- Addressable 600-dpi color print for excellent print quality.
- Real 600-dpi monochrome print for excellent CAD print quality.

750C
750C *Plus*
755 CM

- Quality color printing on plain CAD Bond paper.
- Up to 9 months of indoor lightfastness with new color inks.
- Optional color matching via Pantone-licensed, color palettes and optional color management kit.
- ColorSmart color-rendering technology support for Windows users.
- Darker pigment-based black ink for sharper quality mono lines and text.
- Better image quality via advanced imaging print modes.
- Support for additional media including clear film, and several types of glossy paper.
- Windows 95 support.
- Much faster Windows driver that uses half as much memory and has an “always available” print mode.
- Faster AutoCAD driver.
- Broad support of Asian drivers (Japanese, Korean, Chinese and Taiwanese for AutoCAD and Korean and Japanese for Windows).
- Faster I/O via a 5-times improvement in Bitronics I/O interface speed.
- Support for HP Jet Direct MIO 6.0 and Jet Direct EX and fast parallel port ECP.
- New industrial design.
- US EPA Energy Star rating (45 watt limit).

2

Site Planning and Requirements

Power Requirements

HP DesignJet 700, 750C, 750C Plus and 755 CM plotters/printers have self-adjusting power supplies and do not require a voltage selector or switch settings prior to use. The table below lists the power requirements for the plotters.

Power Requirements

Source Voltage Requirements:	Voltage	Max current (rms)
	100 V ac	1.40 A
	120 V ac	1.17 A
	220 V ac	0.64 A
	240 V ac	0.60 A
Normal Operating Range:	90 to 264 V ac	
Frequency:	47-63 Hz	
Consumption:	140 watts maximum	

WARNING **The ac power outlet (mains) must have a protective earth (ground) terminal. Serious shock hazard leading to death or injury may result if the plotter is not properly grounded.**

Choosing an Interface Cable

(Instructions ➧ User's Guide, chapter 1, § *Connect the plotter to your computer.*)

Serial (RS-232-C) Interface A short cable (less than 15 meters or 50 feet) is recommended for the RS-232-C interface. A longer cable is permissible, provided the load capacitance does not exceed 2500 picofarads.

Parallel (Bi-Tronics/Centronics) Interface Use a short cable (less than 2 meters or 6.6 feet) for the parallel interface.

(Cable part numbers ➧ Service Manual, chapter 11.)

Choosing a Suitable Plotter Environment

The table below lists the environmental specifications for the plotters.

Environmental Specifications

Temperature		
Storage		–40 to +70 °C (–40 to +158 °F)
Operating		0 to +55 °C (+32 to +131 °F)
Optimal Operating		+15 to +30 °C (+59 to +86 °F)
Relative Humidity (Operating)		20 to 80 % RH
Operating environment:	**Temperature**	**Relative Humidity**
Plotter/Printer	0 to 55°C (32 to 131°F)	5-95%
With cartridges and media:	15 to 35°C (59 to 95°F)	20-80%
Optimal print quality and media handling:	15 to 30°C (59 to 86°F)	20-80%
Storage environment:	**Temperature**	**Relative Humidity**
Plotter/media	–40 to +70°C (–40 to +158°F)	20-80%
Cartridges	–40 to +60°C (–40 to +140°F)	20-90%
Acoustics:*	**Sound Pressure**	**Sound Power**
Operating	54 dB (A)	6.5 bels (A)
Idle	< 20 dB (A)	< 3.6 bels (A)

*These specifications are typical sound pressures at a one-meter bystander position. Idle specification assumes fan is off.

Plotter Dimensions and Weight

Plotter Model:	E/A0-size plotters	D/A1-size plotters
Height (window closed)	1200 mm (47.3 in)	1200 mm (47.3 in)
Depth	675 mm (26.6 in)	675 mm (26.6 in)
Length	1370 mm (54 in)	1072 mm (42.2 in)
Weight	42 kg (93 lbs)	32 kg (71 lbs)

Notes

3

Installation and Configuration

Unpacking and Assembling the Plotter/Printer

When the plotter/printer arrives at the user site:

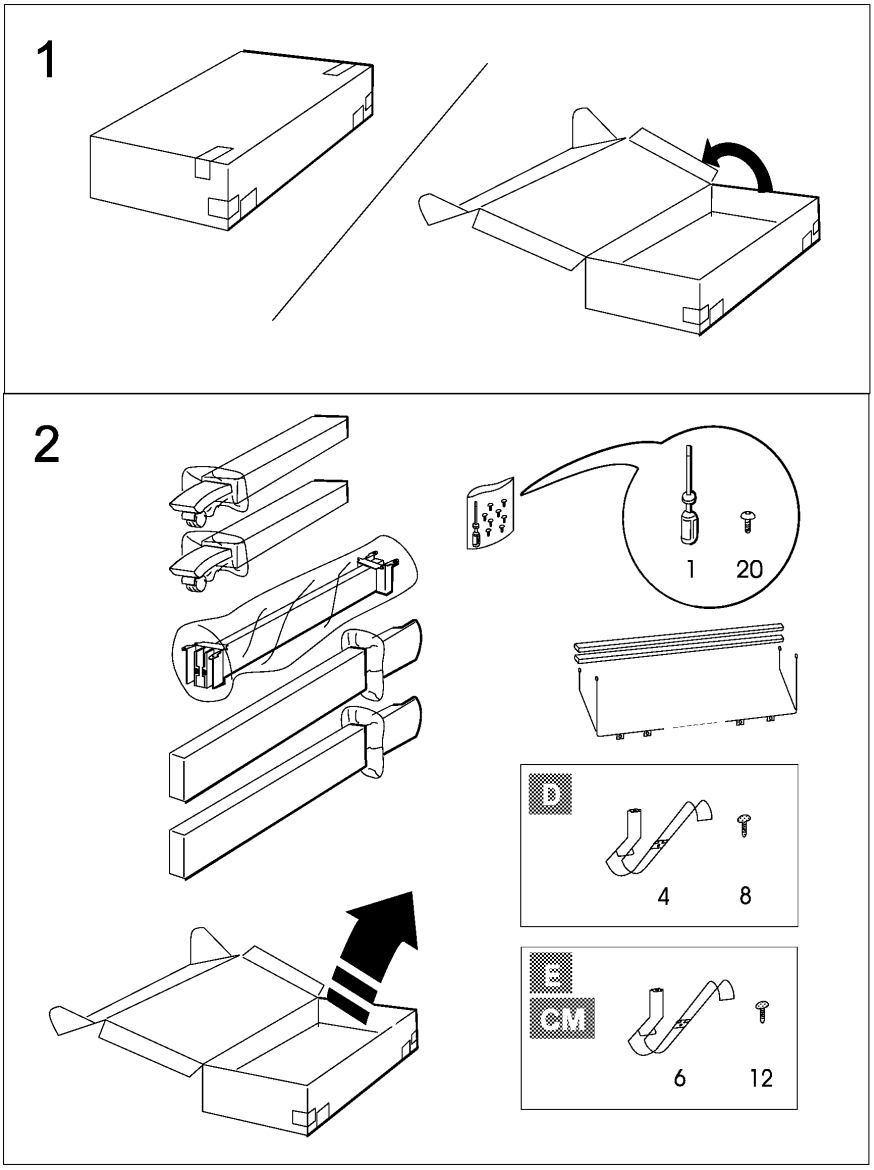
1 Inspect the shipping container for damage.

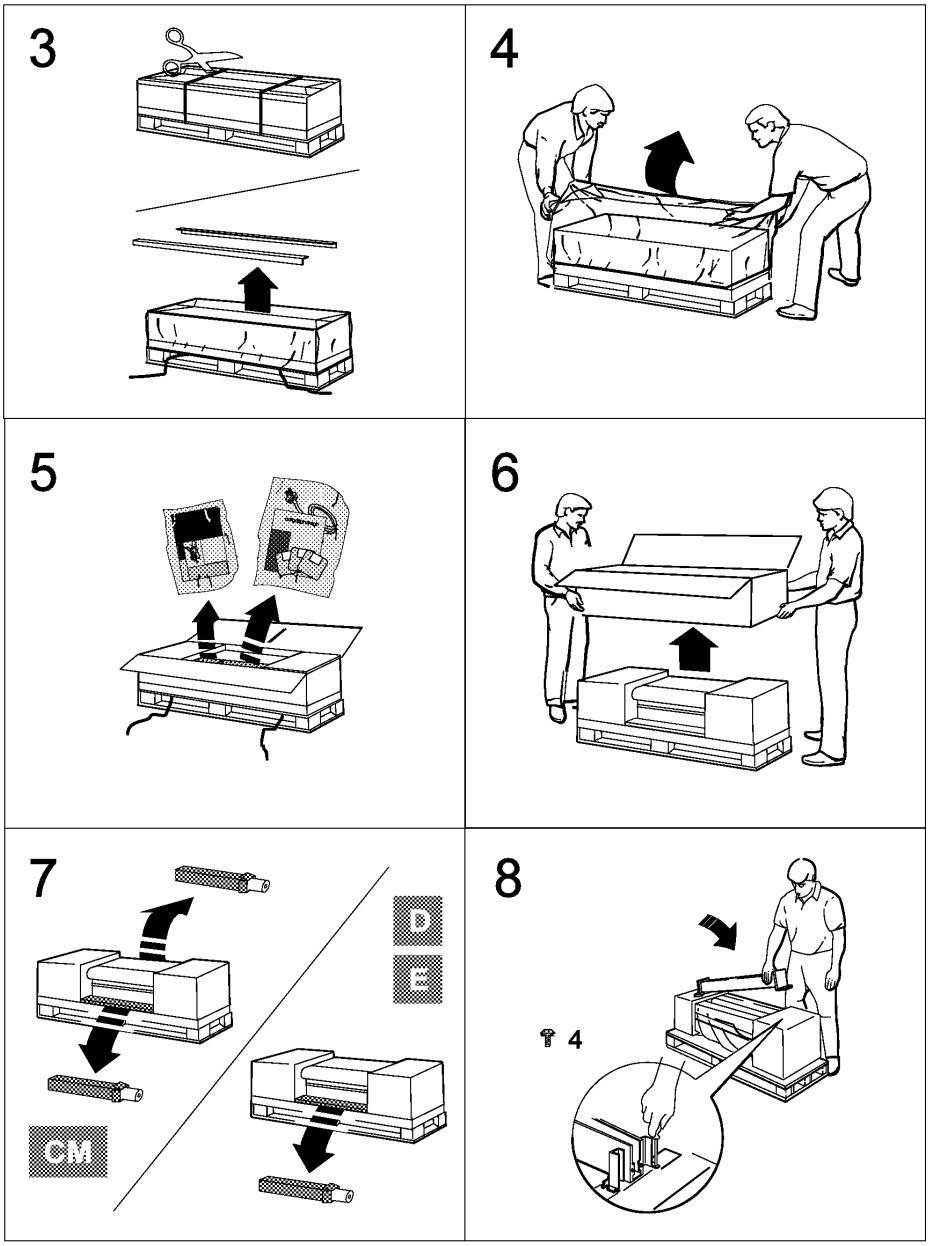
If the shipping container shows signs of damage, retain it until you have checked the contents of the shipment and verified the performance of the plotter.

2 Unpack and assemble the plotter, following the series of illustrations as follows.

The capitals included in the frames correspond to the following plotters:

D: DesignJet 700, 750C and 750C Plus (D/A1)
E: DesignJet 700, 750C and 750C Plus (E/A0)
CM: 755CM (E/A0)


1
2
1
20
D
4
8
E
CM
6
12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4

Inspecting the Plotter/Printer for Damage

Visually inspect the plotter/printer for damage, scratches, dents, or other mechanical defects. If the plotter is damaged in transit, notify the carrier and the nearest HP Sales and Support Office. Retain the shipping container and insulation material for the carrier's inspection. The Sales and Support Office will arrange for the repair or replacement of the plotter.

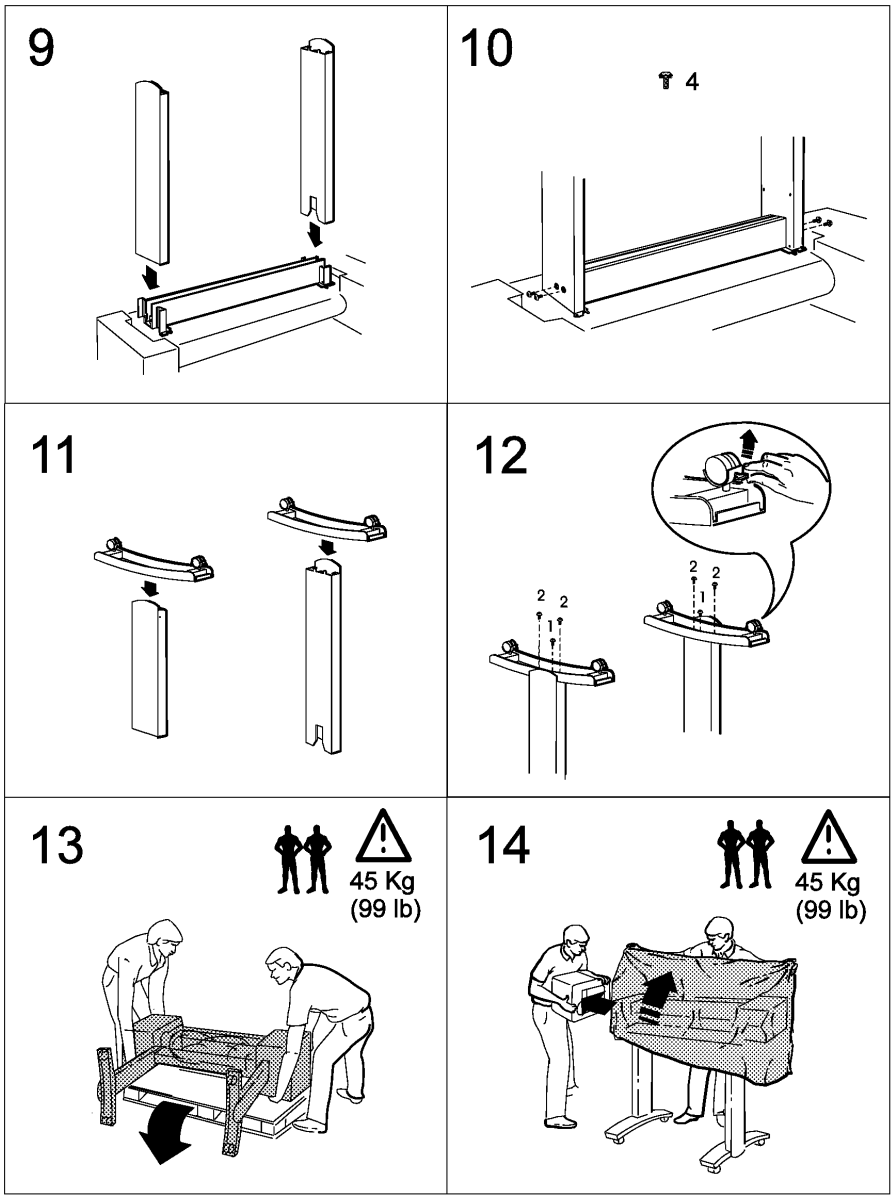
Repacking the Plotter/Printer

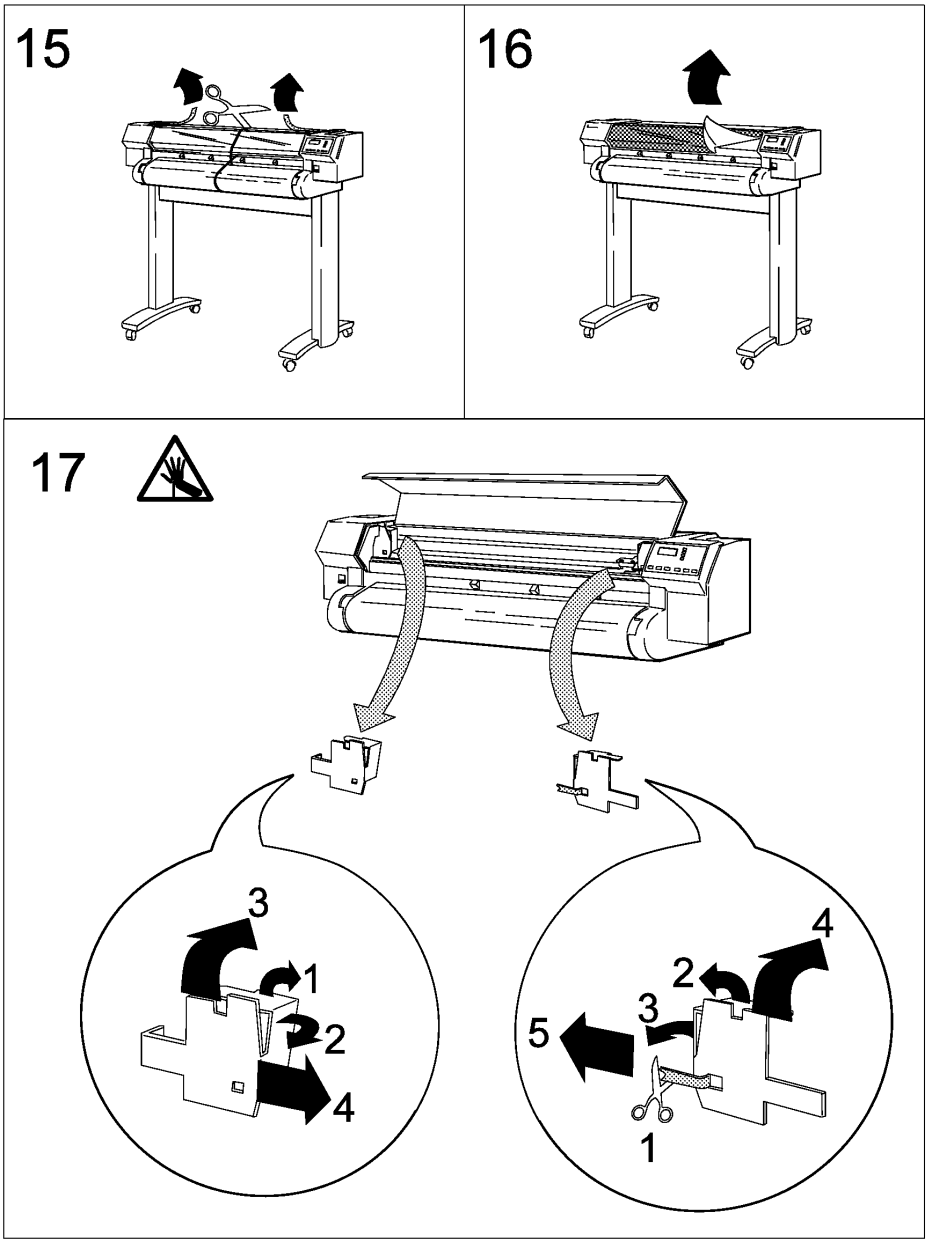
You can order a repacking kit if you need to repack the plotter/printer and don't have the shipping container and insulation material. (Part numbers ➧ chapter 11.)

Be careful when returning the plotter/printer to ensure that at no time is it turned upside down – neither during packing nor shipment – otherwise ink from the spittoon may leak and damage the equipment.

Assembling the Legs and Media Bin (Optional)

If the user has purchased the optional legs and media bin for the plotter, assemble them following the series of illustrations below:




15
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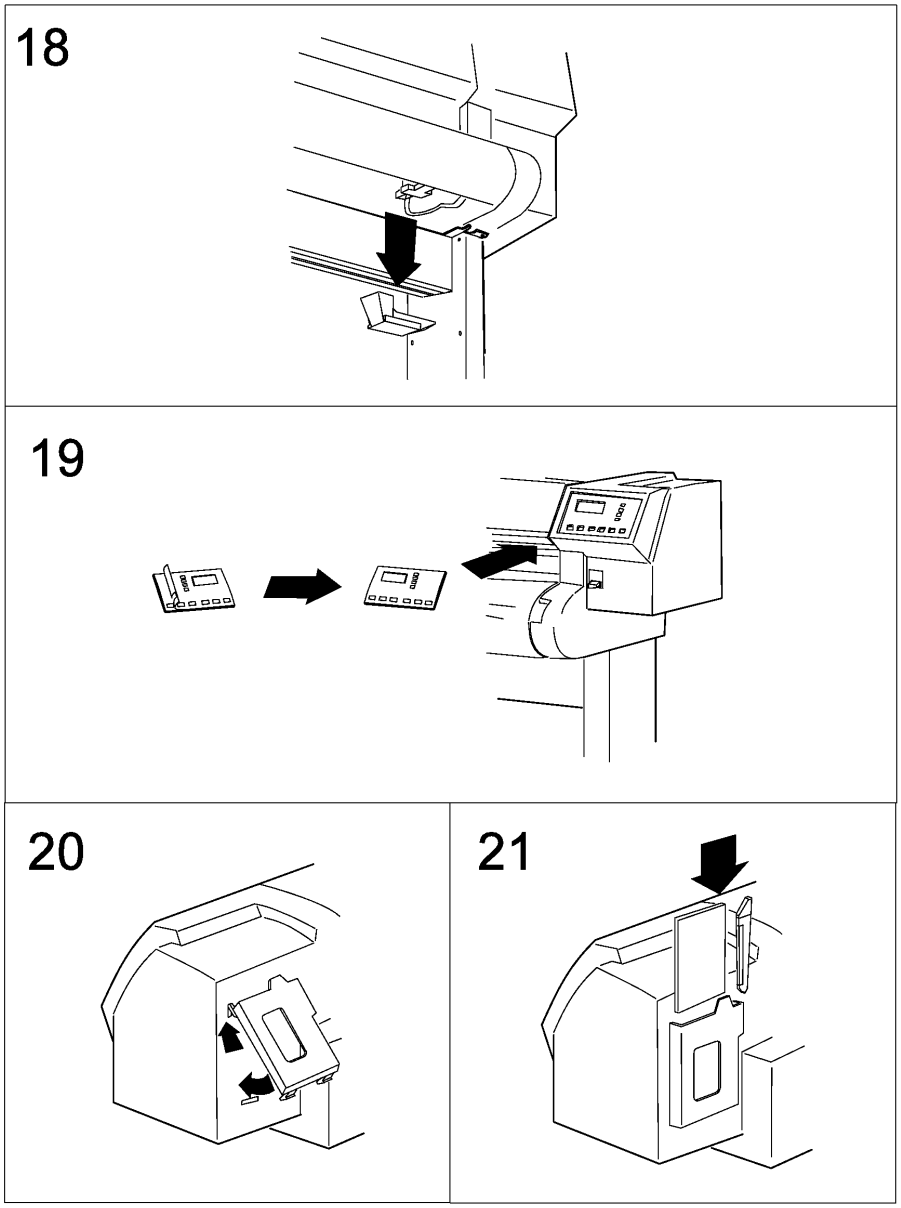
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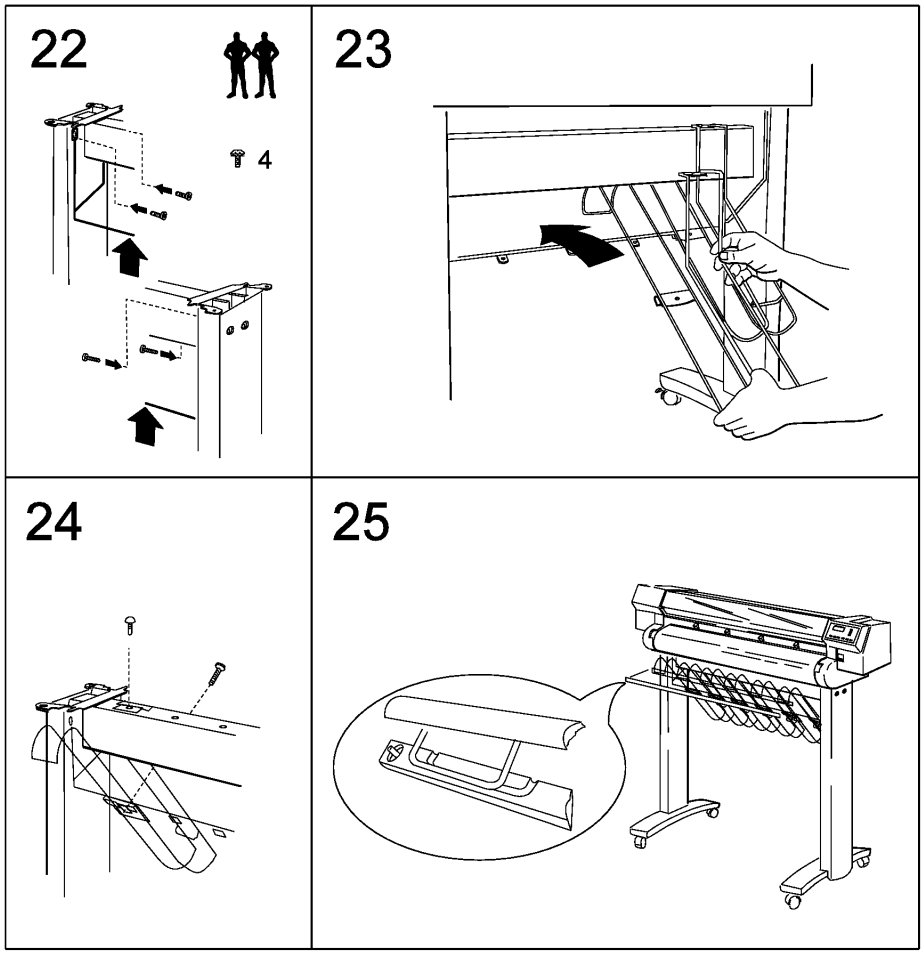
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25

Installing the Plotter/Printer

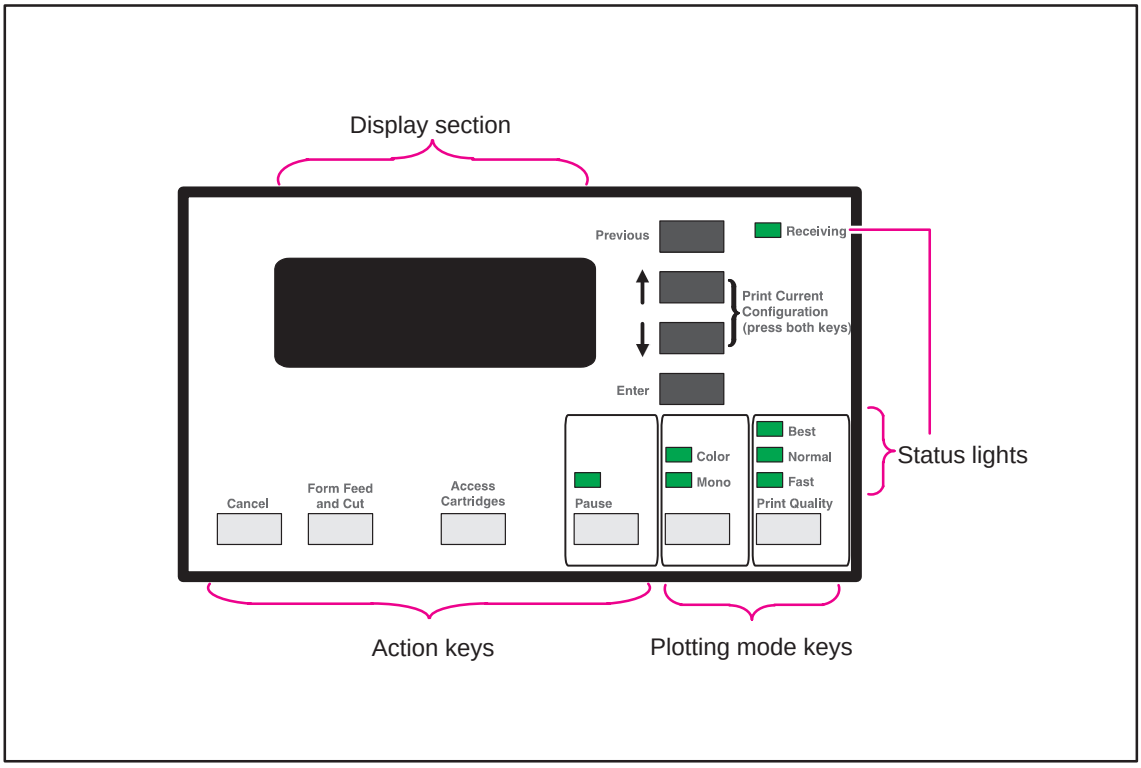
(Instructions ➧ User's Guide, chapter 1, *Setting up your plotter*)

Using the Plotter

(Instructions ➧ User's Guide)

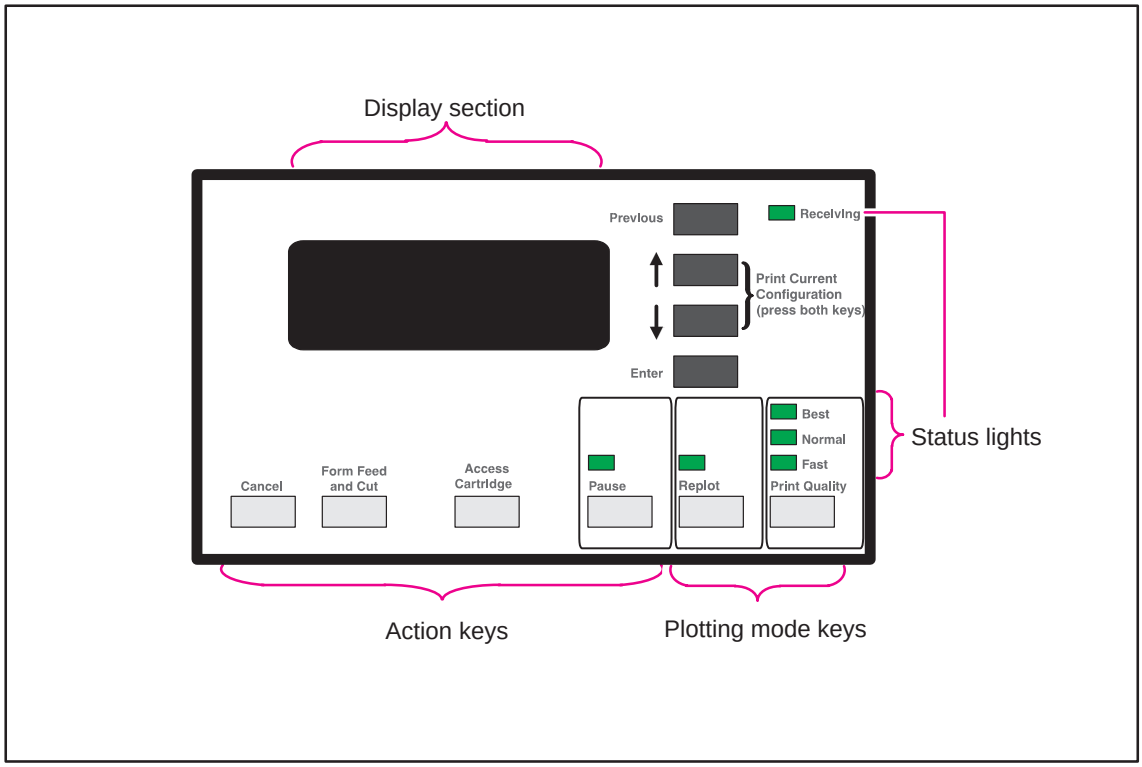
750C
750C *Plus*
755 CM

DesignJet 750C/750C Plus/755CM Front Panel



700

DesignJet 700 Front Panel



Third-Party Inks and Off-Axis Ink Systems

HP does not support third-party inks or off-axis ink systems for use with any of its DesignJet series plotters or printers. If a failure or damage to such HP products is found to be directly attributed to the use of third-party inks or off-axis ink systems (or any other non-supported HP supply or accessory), the repair will NOT be covered under HP's warranty or maintenance contract. In such cases, standard time and material charges will be applied to service the plotter or printer.

Configuring the Plotter/Printer

(Instructions ➧ User's Guide, chapter 7)

The User's Guide describes how to:

- Print out a current configuration sheet (an example is given on the following page).
- Change the front-panel settings.
- Change the graphics-language settings.
- Change the interface settings.
- Upgrade the plotter with more memory (not applicable to the DesignJet 755CM).

Verifying Plotter Operation

The plotters contain several types of internal operational checks and tests to ensure that the plotter is properly functioning and to help identify problems if any are detected.

Power-On Self-Tests

Whenever you switch the plotter on, it automatically performs a series of internal self-tests and mechanical initialization sequences. If a failure occurs, an error is indicated on the front-panel display. You can perform a failure analysis by reading the error codes/messages. (Details ➧ chapter 8.)

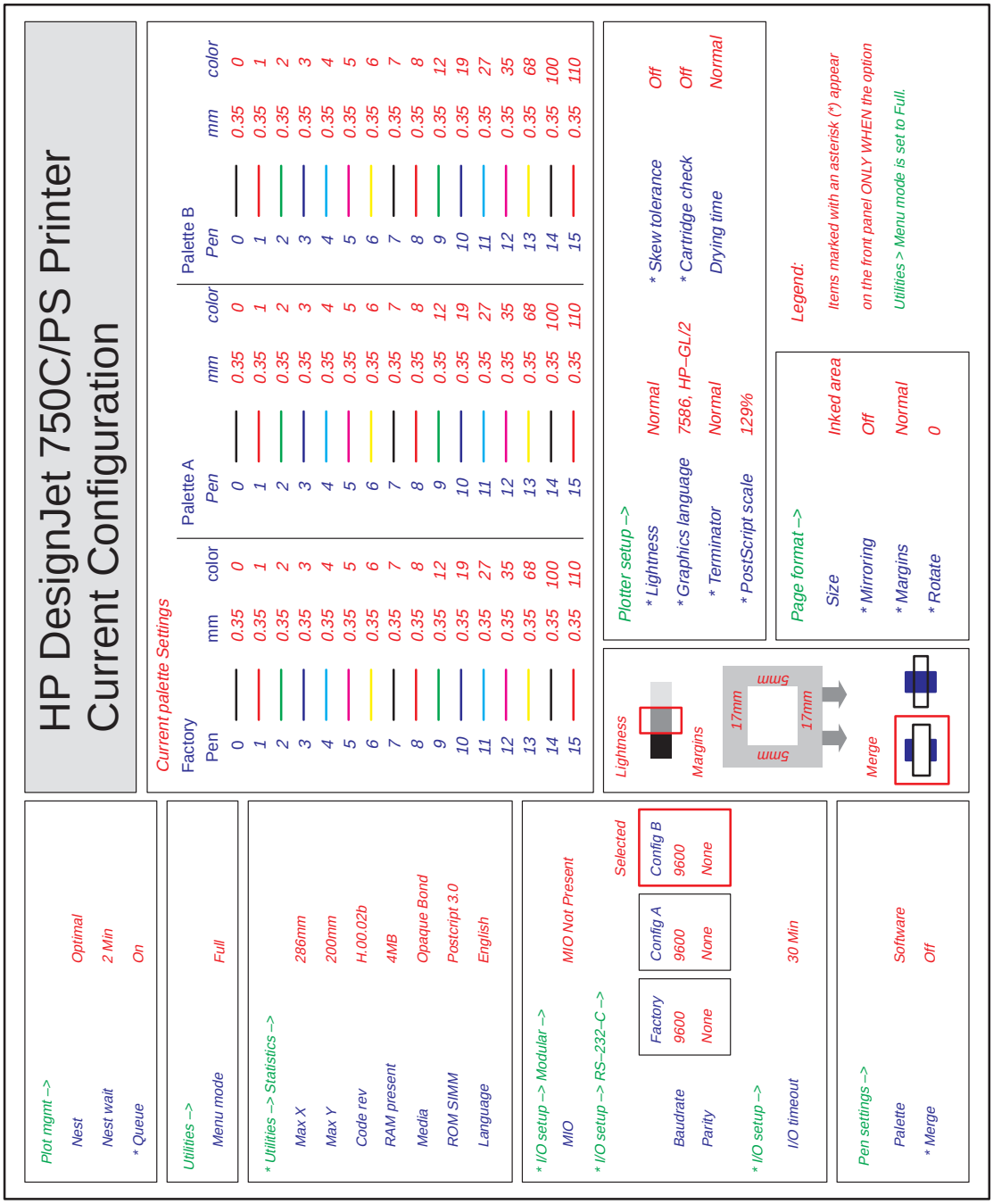
Demonstration Plot

You can check proper plotter operation by plotting and examining the demonstration plot, which is resident in the plotters. This plot shows different plotter capabilities including pen line widths and shading. You can set the demonstration plot, to plot in any of the languages listed in the **Language** box on the front-panel display.

(Instructions ➧ User's Guide, chapter 1, § *Change the language,*
➧ User's Guide, chapter 1, § *Send a sample plot or demonstration plot*.)

Example of the Current Configuration Sheet

The following is a scaled version of a DesignJet 750C/755CM current configuration sheet:



Notes

4

Preventive Maintenance

Moisture on the Plotter/Printer

Users should use the plotter in an environment between 5% and 95% relative humidity. To recover from moisture condensation, turn the plotter off, and, using the main roller as a reference, wait until the plotter is completely dry before using it again. (Other environmental specifications ➧ chapter 2.)

Noisy Carriage Bushing

To prevent noisy movement of the carriage, remove aluminum or dust particles from the bushing at the back of the carriage, and from the slider path along which the bushing moves.

Belt Swelling

To prevent new belts from swelling incorrectly, keep them in their bags with dissicant until you need to install them.

Cleaning the Plotter

To maintain the plotter in good operating condition, keep it free of dust accumulation, ink, and other contamination. Cleaning intervals are determined by the plotter environment and by the types of plotter supplies used.

WARNING **Disconnect the plotter from the power source prior to performing any cleaning. DO NOT allow liquid to run on to electrical components or circuits, or through openings in the enclosure, as this can create a shock hazard leading to death or injury.**

General Cleaning

Proper general cleaning should include the following:

1. Blow away dust accumulation with compressed air if available.
2. Clean the outer surface of the plotter with a damp sponge or cloth. Use a mild soap and water solution if necessary. Do not use abrasive cleaners.
3. Wipe the plotter dry with a soft lint-free cloth.

Scheduled Maintenance

In some segments of the plotter market, the customer tends to print more than the maximum number plots that the throughput allows, exceeding by far the limit of the design. When this happens the customer runs into print quality problems and continuous plotter failures.

The purpose of scheduled preventive maintenance is to avoid these failures - ensuring a good performance during all the product life.

Level of Plotter Usage

These are the usage limits of the plotter:

- The service station and spittoons: Limited by the number of spits, wipes and primes performed which are directly proportional to the number of plots.
- The Y-axis: The wear of the motor depends on the number of carriage cycles. The levels of friction can increase due to dust and ink accumulation on the slider rods.

Given these constraints, preventive maintenance is required when the plotter usage exceeds the following thresholds:

Number of plots:	20, 000
Number of carriage cycles:	4,500,000

Customers with a normal plotter usage will not require any maintenance.

During the plotter life (5 years, 220 working days per year) normal plotter use means less than (on average):

20 pages per day in CAD
or
12 pages per day in LFP

Implementation

Two of the EEROM counters are assigned to counting the number of plots and the number of carriage cycles respectively.

When the plotter exceeds the limits quoted above, the front panel displays the following message:

“Maintenance Advised”

The configuration plot also conveys the usage information, and it is accessible by the user.

Usage Information

Number of plots
Number of carriage cycles

Cleaning the Drive Roller

WARNING **The drive roller cleaning procedure should be performed only by HP trained personnel: otherwise personal injury may occur.**

If ink is spilled on the drive roller, remove the ink. Due to the ink's reflectance, ink on the roller can disrupt the plotter's edge-sensing function. To remove any ink from the roller, perform the following procedure:

1. Connect the plotter to an ac power source.
2. Hold the **Enter** button down and switch the plotter ON.
3. Using the arrow buttons, scroll to the *utilities* menu display, then press the **Enter** button.
4. Using the arrow buttons, scroll to the *statistics* submenu display.
5. Simultaneously press the **Enter** and the **Up Arrow** buttons to access the *service tests* menu.
6. Using the **Up Arrow** button, scroll to reach the following display:

   SERVICE TESTS
   22 X Motion control

7. Press the **Enter** button, and the following display will appear:

   REMOVE MEDIA
   PRESS ENTER

8. Remove any media from the plotter.
9. Raise the window. Holding the window sensor down with a pen, pencil or small screwdriver, press the **Enter** button. The display will show that the arrow buttons can be used to control the roller speed for cleaning. Press the **Up Arrow** button several times until the drive roller reaches a convenient speed for cleaning.

   The speed of the roller can be reduced or increased by pressing the appropriate arrow button.

10. Apply any common household cleaning solution (water based only) to a soft, lint-free rag and apply it to the drive roller surface while it is rotating. Thoroughly clean the roller surface.
11. Stop the roller by pressing the **Enter** button when you have finished cleaning.
12. Press the **Enter** button to return to the SERVICE TESTS menu display.
13. Using the *Previous* button, scroll to the *"STATUS Ready for Media"* display.
14. Allow the drive roller to dry before inserting media in the plotter.

After the maintenance is done the Customer Engineer resets the EEROM counters through the Service Menu, which clears the maintenance advised message.

Preventive Maintenance Kit C3195-60166

The preventive maintenance kit consists of:

Service station assembly	C3195-60162
Spittoon assembly	C3195-600027
Y-axis motor	C3195-60112
(Includes anti-static cloth and Isopropyl alcohol)	
Encoder D/A1	C4713-60098
Encoder E/A0	C4714-60098
Lubricant	6040-0855

Y-axis Maintenance Kit

In addition to the wearing of the Y-axis motor, the friction in this area can increase due to the accumulation of ink particles and dust from the media or the atmosphere in the vicinity of the slider rods.

The Y-axis maintenance kit includes a cloth and alcohol to clean the slider rods properly, and a lubricant to apply onto the rods.

The most important parts to keep clean are the upper and internal sides of the rods.

Procedure

Service Station

- Replace the service station.
- Replace the right spittoon.

Y-axis:

- Clean the slider rods with isopropyl alcohol and antistatic cloth to remove the ink particles and dust.
- Replace the Y-axis motor.
- Replace the encoder strip.

EEROM Counters

Mandatory Zero Resets

After the repairs have been performed, follow the menu instructions to reset the plot cycle counter to zero.

Reset the counter of carriage cycles when:

- Y-motor is replaced.
- Slider rods are cleaned.
- Slider rods are lubricated.

Notes

5

Functional Overview

Introduction

This chapter contains a simplified description of the DesignJet 700, 750C and 750C Plus plotters and DesignJet 755CM printer circuits and mechanical functions. Mechanical and Printed Circuit Assembly (PCA) overviews present a functional description of how the plotter operates.

Simplified Description of Circuits

Communications

HP DesignJet 700, 750C, 750C Plus and 755CM circuits communicate with an external controller by way of either a Bi-tronics or an RS-232-C interface.

Bi-tronics is handled by a separate gate array.

RS-232-C communications are handled by a universal asynchronous receiver-transmitter (UART) and baud rate generator built into the processor-support application-specific integrated circuit (ASIC).

If an approved modular input/output (MIO) printed circuit assembly is installed, the circuits can communicate via an HP-IB interface or can be connected to a network. The main processor reads Bi-tronics, HP-IB, and Ethernet communications through the port it uses to read memories (ROM or DRAM).

Plotting

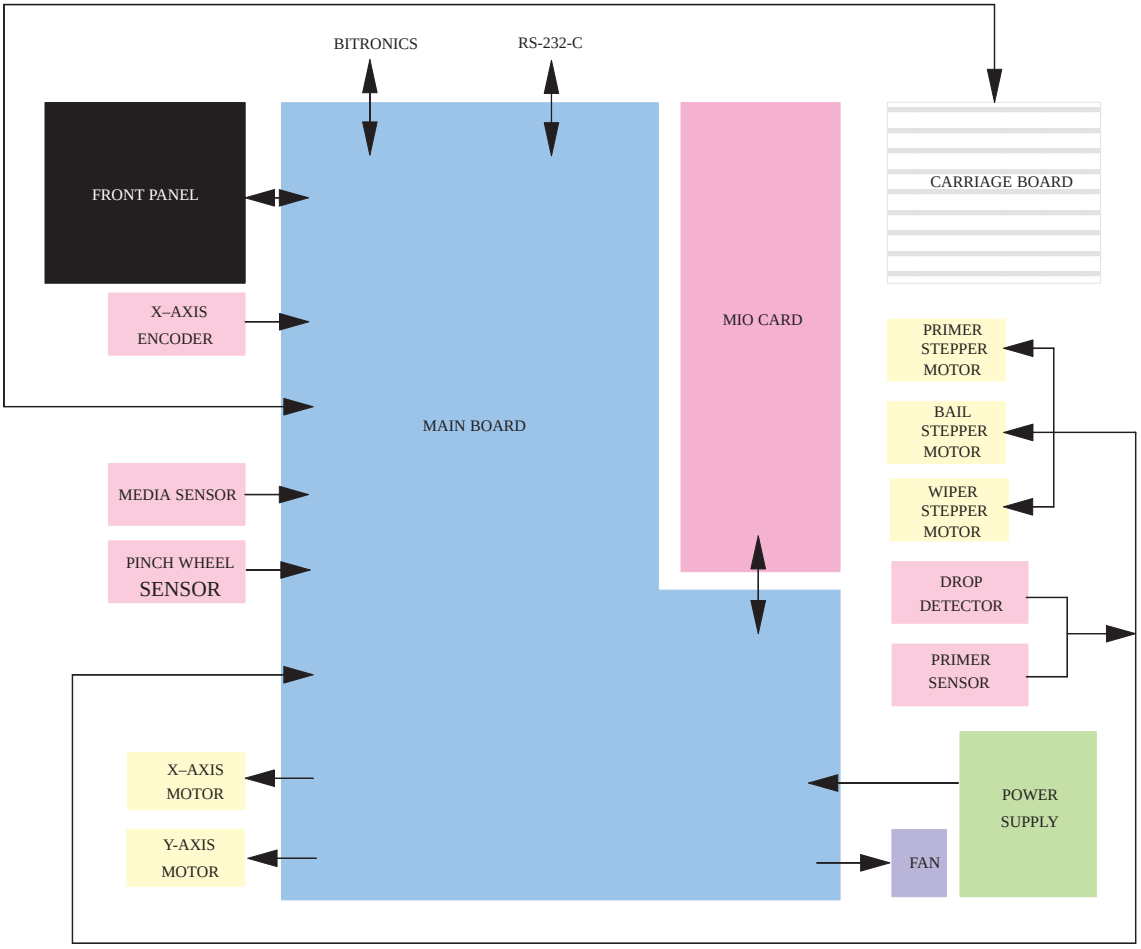
HP DesignJet 700, 750C, 750C Plus and 755CM plotters/printers accept plots in the following forms:

- Hewlett-Packard Graphics Language (HP-GL).
- Hewlett-Packard Graphics Language 2 (HP-GL/2).
- Hewlett-Packard Raster Transfer Language (HP RTL).

The main processor converts the plot into an internal format and stores the entire plot, in its dynamic random-access memory (DRAM) − except for special types of RTL plots which may begin to print while they are still being received.

Then, it transfers the plot, one swath at a time, into the swath RAM via the processor-support ASIC.

Electronics Block Diagram



ASICs

On the main PCA, the processor-support ASIC is designed to manipulate swath data into the actual firing order for the nozzles on the four cartridges that are mounted on the carriage assembly. The processor-support ASIC receives pixels from the physical swath RAM and sends them serially to the carriage ASIC.

A main processor on the main PCA controls all plotter operations with the help of the processor-support ASIC and the servo processor. Communications between the servo processor and the main processor take place through registers in the processor-support ASIC.

The processor-support ASIC provides pulse-width-modulated signals to the Y-axis (carriage-axis) and the X-axis (media-axis) motor drivers, to drive the Y-axis and the X-axis motors. The linear encoder connected to the carriage PCA gives the processor-support ASIC feedback about the position of the carriage. The X-axis motor encoder on the X-axis motor gives the processor-support ASIC feedback about the position of the X-axis motor.

In addition, the processor-support ASIC contains a DRAM controller that generates multiplexor control-and-enable strobes for the DRAM row and column addresses during a memory access. The DRAM controller also arbitrates between a memory request and a refresh request and performs the refresh operation.

Servo Processor

The servo processor communicates with the main processor through registers in the processor-support ASIC. The servo processor writes information into the registers and sends an interrupt to the main processor. The main processor then reads the registers, and the interrupt is automatically cleared. Using this procedure, the servo processor provides the main processor with information from the plotter sensors. The sensors give the main processor the ability to check status conditions.

The servo processor controls the:

- Servo motors.
- Front panel.
- Fan.
- Sensors.
- Electrically erasable read-only memory (EEROM).
- Stepper motors.

Stepper Motors

There are three types of stepper motors:

- The primer stepper motor is used to drive the nozzle primer.
- The bail stepper motor drives the bail.
- The wiper stepper motor drives the orthogonal wiper.

Cartridges

A line sensor on the carriage PCA provides the servo processor with information used to align the cartridges. It also provides a media edge-sensing capability to the plotter (for width measurement).

The carriage ASIC controls the firing of the cartridges. It receives pixel data from the processor-support ASIC over a synchronous serial channel. The carriage ASIC contains:

- A 2 x 208-bit shift register (one bit per cartridge nozzle), which performs a serial-to-parallel conversion on the data.
- Timing and sequencing circuitry to ensure that cartridge nozzles are fired in the correct sequence and at the correct time.
- Fire waveform generators to create the fire-pulse waveforms used to fire the cartridges.
- Circuitry for controlling the temperature of the cartridge while printing (brilliant pulse warming).

Cartridge drivers provide the power necessary to fire the cartridges under the control of the carriage ASIC.

During cartridge testing, when the carriage is docked in the service station, the processor-support ASIC provides a means to generate a fire position pulse. The carriage ASIC will receive this signal and fire selected nozzles. If a drop is sensed by the drop detector each time a nozzle is fired, the nozzle is working properly. The independently generated fire position pulse is also used for firing to clear clogged nozzles.

Warm-up pulses are generated when in the “Warm-up When Idle” mode.

Mechanical Overview

Carriage-Axis Mechanism

The carriage (Y-axis) motor is mounted under the plotter’s right endcover. It is electrically connected to the main PCA, which contains a carriage-motor driver. Its drive shaft is mechanically connected to the carriage via a drive belt. When the carriage motor rotates, it moves the carriage assembly. An optical encoder, located on the carriage assembly, provides positional feedback for carriage servo control.

Line Sensor

The line sensor on the cartridge carriage is used to:

- Detect and measure lines when performing cartridge alignment and accuracy calibration.
- Detect media width and skew during media loading.
- Calibrate the media-axis (for banding reduction) using a mark on the roller.

Media-Axis Mechanism

The media (X-axis) motor is mounted under the right endcover and is electrically connected to the main PCA, which contains the media-motor driver. It has a worm-style pinion gear, which meshes with a gear at the right end of the drive roller. When the media motor rotates, it moves the drive roller and, consequently, the media. The encoder mounted on the motor sends feedback about the media motor position to the main PCA.

In DesignJets 700, 750C Plus and 755CM the media motor has a zero position which is indicated to the main PCA via the encoder.

Primer Stepper Motor

The primer stepper motor is mounted on the plotter's left side-plate and connects to the main PCA through the service-station cable. It is controlled by the servo processor on the main PCA and is used to drive the nozzle primer.

Bail Stepper Motor

The bail stepper motor is mounted on the plotter's left side-plate and connects to the main PCA through the service-station cable. It is controlled by the servo processor on the main PCA and is used to drive the bail.

Wiper Stepper Motor

The wiper stepper motor is mounted on the service station and connects to the main PCA through the service-station cable. It is controlled by the servo processor on the main PCA and is used to drive the orthogonal wiper.

Fan

An internal cooling fan is supplied with +12 V. It is switched ON and OFF by the servo processor and is mounted in the electronics enclosure at the rear of the plotter. The fan is primarily used to cool the power supply PCA and the main PCA when plotting.

Window Sensor

The window sensor is a mechanical switch mounted on the right side-plate at its top front edge. Feedback about the window's position (up or down) is sent to the main PCA through the front panel.

Pinch-Wheel Sensor

An optical pinch-wheel sensor is mounted on the lower rear portion of the plotter's right side-plate and is electrically connected to the main PCA. When the pinch arms are raised, a cam in the pinch-arm lift mechanism interrupts the beam of the optical sensor, and, when the pinch-arms are lowered, the beam path is cleared. Thus, the position of the pinch-wheel can be determined from the electrical state of the sensor.

Media Sensor

The media sensor is an optical sensor and is mounted towards the right end of the entry platen.

Two articulated levers block the optical path between the emitter and the receiver when media is not loaded. When media is loaded, both levers are rotated, thus clearing the optical path and changing the sensor state from *open* to *closed*. This double-lever system provides the plotter with leading and trailing edge-sensing capability (for media-length measurement). The media sensor is electrically connected to the main PCA.

Drop Sensor

The drop sensor is an infrared detector mounted in the service station. It is used to test whether the nozzles in the cartridges are operating properly. It is part of a drop-detection system that measures the time from the firing of a nozzle to the sensing of a drop (typically < 900 μsec). The operation of the sensor system depends upon an illuminated infrared optical path, in which the received power is modulated a small amount by a drop passing through an aperture on the way to the waste containment system. The illumination is provided by an infrared LED, which is regulated by an automatic power control to provide a fixed operating point in the optical receiver photo-diode. The automatic power control compensates for contamination, device aging and environmental effects.

Primer-Cam Sensor

An optical sensor mounted on the primer assembly determines the initial position of the primer assembly cam. When the stepper motor that drives the primer assembly rotates in one direction, it obtains the values for selecting each cartridge for priming. When rotated in the opposite direction, a clutch engages a diaphragm to provide the vacuum for priming.

Printed Circuit Assembly (PCA) Overview

Main PCA

There are two clocks on the main PCA. The main clock provides a 32.00-MHz signal directly to the main processor. The 32.00 MHz are divided by the main processor, and the resulting signal is provided to the processor-support ASIC and the Bi-tronics gate array. A separate clock provides a 12-MHz signal to the servo processor.

To perform its functions, the main processor must have access to its memories (ROM and DRAM). To create plots at the direction of an external controller, it must be able to communicate with the controller by its interfaces (MIO, Bi-tronics and RS-232-C). To address the ROM or DRAM interface, the main processor places the appropriate address on the address bus and reads or writes the data directly. Data is passed to the main processor by a transceiver in the case of ROM or DRAM SIMM data. MIO or Bi-tronics input and output data passes through another transceiver on its way to the main processor.

The main PCA ROM contains the following types of information:

- Programs.
- Program constants.
- Character sets.
- Demonstration plot(s).

The main PCA DRAM is used to store the following types of information:

- Variables.
- Temporary constants.
- Plots.

As a plot is received from an external controller by way of one of the plotter interfaces, it is stored in DRAM. When the complete plot is in DRAM, the main processor converts it, one swath at a time, to a format suitable for storage and sends it to swath RAM by way of the processor-support ASIC. A swath has variable height (depending on the print mode) and extends from border to border across the width of the plot. The processor-support ASIC extracts the plot data from the swath RAM, converts it to pixels, and sends the pixels serially by way of the trailing cable to the carriage ASIC on the carriage PCA.

Part of the cartridge shutdown circuitry is on the main PCA. The cartridges are shutdown:

- When the +5V falls below a certain value (during power-up/down).
- When the carriage ASIC asserts shutdown during an access cartridges command.
- Between swath printing.
- When idle.

Carriage PCA

The carriage PCA contains an ASIC that controls the operation of the cartridge drivers that switch power pulses from the ASIC to fire the cartridges. The carriage board also provides feedback to the main PCA for the current position of the carriage assembly. A line-sensor module mounted on the carriage PCA senses the lines produced by the cartridges and is used for cartridge alignment. The line sensor also provides an edge-sensing capability used to identify the media loaded in the plotter. Voltage-sensing circuitry senses deviations in the cartridge voltages supplied to the print heads and sends signals to the voltage regulators on the main PCA.

The carriage processor and the print-control ASIC on the carriage PCA are driven by a 12.288-MHz, on-board clock. At power-on time, the main PCA reset circuit delays the operation of the print control ASIC until the +5 V reaches a steady state.

Line-Sensor PCA

The line-sensor PCA is used to calibrate the writing system for mechanical tolerances as well as sensing the left and right edges of the media. It consists of a light-sensing IC connected to the PCA through a ZIF connector. The resulting voltages are coupled and then measured by an eight-bit, analog-to-digital (A/D) converter whose bits are sent serially to the carriage microprocessor. A green and blue LED illuminates the surface being read by the line-sensor. A dual lens system with a unity conjugate ratio system directs the light from the illuminated surface to the line-sensor.

Temperature-Sensor IC

A temperature-sensor IC is used to measure ambient temperature in the PCA near the print heads. It is used to calibrate the cartridge temperature control circuitry.

Linear-Encoder IC

A linear encoder detects cartridge carriage position, as the carriage assembly moves along the encoder strip. The linear-encoder IC is connected to the carriage PCA via a 5-pin ZIF connector.

Print Control

The carriage processor operates at 12.288 MHz. The clock signal is generated by a crystal-oscillator circuit, internal to the ASIC. The primary task of the processor is to configure the print-control ASIC and read data to control cartridge energy and cartridge calibration. It communicates with the servo processor on the main PCA using a serial port.

The print control (carriage) ASIC receives pixel data from the processor-support ASIC on the main PCA via four synchronous serial channels and an on-board line driver. Signals from the print-control ASIC fire the nozzles in the print heads. Whenever a print head nozzle is fired, a comparator sends a pulse to a counter in the carriage microprocessor.

The dual-voltage, remote sensing circuitry sends an analog sensing signal to the dual voltage regulators on the main PCA. When the voltage to the print heads deviates from the optimum cartridge voltages the regulator will adjust the voltage to bring it back to the optimum value. Cartridge voltages are ON when printing a swath and briefly at power-up, but OFF when idle or accessing cartridges.

PWM Signals

The main board contains the drivers for the media and carriage motors. The drivers are controlled by the PA and PB signals from the processor-support ASIC. PA and PB are pulse-width-modulated (PWM) signals. The PA signal to the media-motor driver causes the media-motor to drive the media up and out of the front of the plotter. The PB signal to the media motor driver causes the media motor to drive the media down, over the entry platen and out of the plotter. The PA signal to the carriage-motor driver causes the carriage motor to drive the carriage toward the right side of the plotter. The PB signal to the carriage-motor drives the carriage towards the left side of the plotter.

Front-Panel PCA

The front panel consists of:

- A 2-row by 20-character vacuum-fluorescent display (VFD).
- Seven LED indicators (six LEDs on the HP DesignJet 700).
- A 10-button key pad.

The servo processor on the main PCA writes serially to the VFD and the LEDs and reads the key pad on its input/output lines. It provides local control, configuration and testing of the plotter and displays various plotter conditions.

Drop Sensor PCA

The drop sensor is located in the drop-detect assembly. Its purpose is to detect ink drops during cartridge testing. The drop sensor contains a detector system that detects the presence of a drop shortly after it is fired into the detector. In order for the drop to be fired into the detector, the cartridge must be positioned over the sensor. An infrared LED sends a beam across an aperture which is received at the other side by a photo-sensitive diode. When a drop passes through the beam, it causes a disturbance in the reception. The slight modulation in power output by the receiving diode is amplified by the pre-amplifier, further amplified by the amplifier, and sent to the processor-support ASIC on the main PCA. The processor-support ASIC can measure the time between the firing of a print-head nozzle and reception of the amplified drop-detect signal in less than 900 microseconds.

Power-Supply PCA

An auto-ranging power supply is located in the electronics enclosure assembly. It accepts and automatically adjusts to an ac input of 90 V through 264 V and produces regulated voltages of +5 V, +12 V, and −12 V and an unregulated +24 V. These voltages, produced by the power supply, are used as follows:

- +24 V — Motor drivers and cartridge voltage regulator on the main PCA. (Regulated +9 to +15 V for cartridge circuits on the carriage PCA).
- +12 V — Fan power, MIO, RS-232 driver, Carriage PCA, Drop Sense PCA. Also used for programming Flash SIMMs on the Main Board.
- −12 V — RS-232 driver.
- +5 V — IC power and sensors, and Front-Panel PCA.

The primary portion of the supply contains fusing and input protection circuitry, line filters, and a rectifier. The primary output is converted to a pulse-width-modulation (PWM), unidirectional current by a flyback dc-to-dc converter.

The secondary portion of the power supply contains the four secondary windings of the transformer that convert the PWM current in the primary to four ac voltages, which are rectified to the +5 V, +12 V, −12 V and +24 V dc voltages required by the plotter. Standard +12 V and −12 V regulators are included in the secondary portion of the power supply.

6

Removal and Replacement

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- Removing the Starguard Assembly 6-40
- Removing the Primer 6-41
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- Removing the Rollfeed Cover Assembly 6-51
- Removing the Rollfeed Module Assemblies (Left and Right) 6-52
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Safety Precautions

(Safety symbols ➧ Immediately after the table of contents.)

Review WARNING and CAUTION symbols and instructions before you service the plotters. Follow these warnings and cautions for your protection and to avoid damaging the plotter.

WARNING

Serious shock hazard leading to death or injury may result if you do not take the following precautions:

Ensure that the ac power outlet (mains) has a protective earth (ground) terminal.

Switch the plotter off, and disconnect it from the power source prior to performing any maintenance.

Prevent water or other liquids from running onto electrical components or circuits, or through openings in the enclosure.

Electrostatic Discharge (ESD) Precautions

To prevent damage to the plotter circuits from high-voltage electrostatic discharge (ESD)

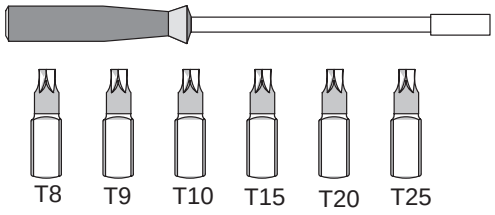
1. Do not wear clothing that is subject to static build-up.
2. Do not handle integrated circuits (ICs) in carpeted areas.
3. Do not remove an IC or a printed circuit assembly (PCA) from its conductive foam pad or conductive packaging until you are ready to install it.
4. Ground (earth) your body while disassembling and working on the plotter.
5. After removing a cover from the plotter, attach an earthing (ground) lead between the PCA common and earth ground. Touch all tools to earth ground to remove static charges before using them on the plotter.
6. After removing any PCA from the plotter, place it on a conductive foam pad or into its conductive packaging to prevent ESD damage to any ICs on the PCA.

Reassembly

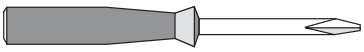
Most of the procedures in this chapter describe how to disassemble the plotter. Unless otherwise specified, reassemble the parts in the reverse order of disassembly.

Required Tools

The following tools are required to disassemble and repair the plotters.

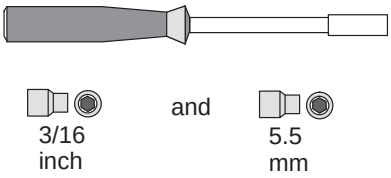


Long Torx screwdriver with the indicated attachments.

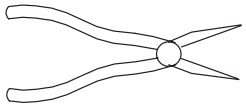


Pozidrive PZ1 screwdriver.

Small flat-blade screwdriver.



Nut driver with the indicated attachments.



Needle-nose pliers.

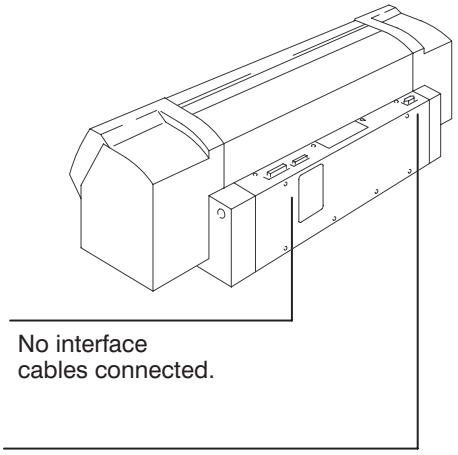
Spring hook.

10X Magnifier.

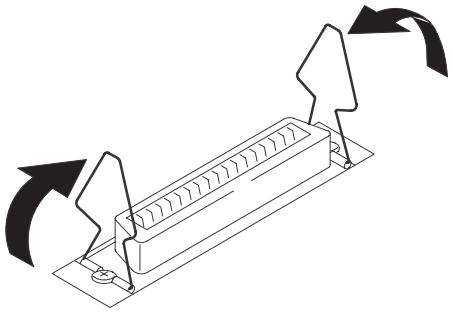
Loopback connector
(HP Part Number 07440-60302).

Removing the Electronics-Enclosure Cover

1 Ensure that the plotter is switched **off** and that the power cord and interface cable(s) are not connected to it.

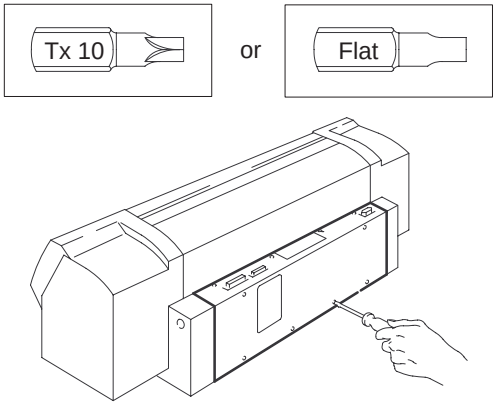


2 At the back of the plotter, ensure that the two small wire clamps of the parallel port are positioned vertically.

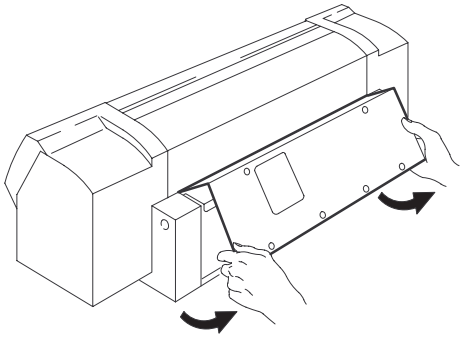


3 Remove the screws that attach the cover to the electronics enclosure.

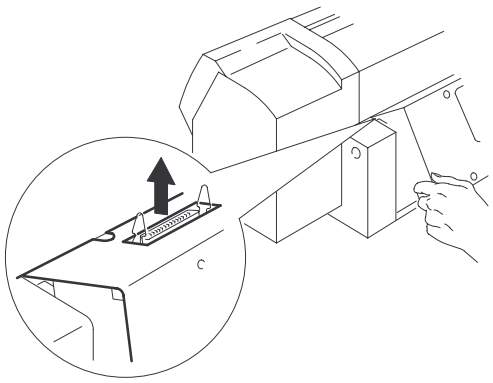
D/A1-size plotters have six screws.
E/A0-size plotters have eight screws.



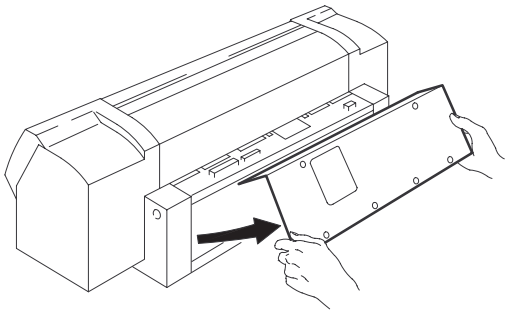
4 Gently lift up the cover to an angle of 45°.



5 Push the cover up so that the tabs can slide out of the slots at the top of the electronics enclosure.



6 Carefully pull the cover clear of the plotter.

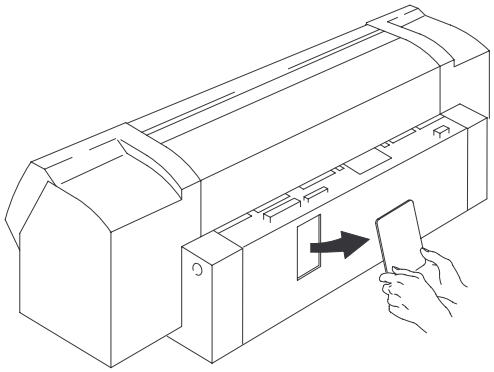


Removing a Memory Module (DRAM/ROM SIMM)

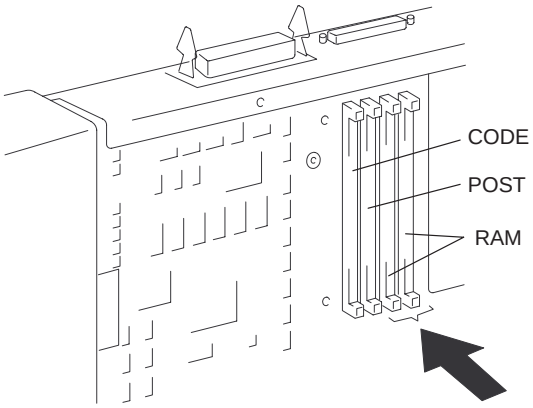
The user may have installed an optional DRAM/ROM SIMM in the plotter. Perform the following procedure, if you need to remove it.

1 Read *ESD Precautions* ➧ page 6-3.

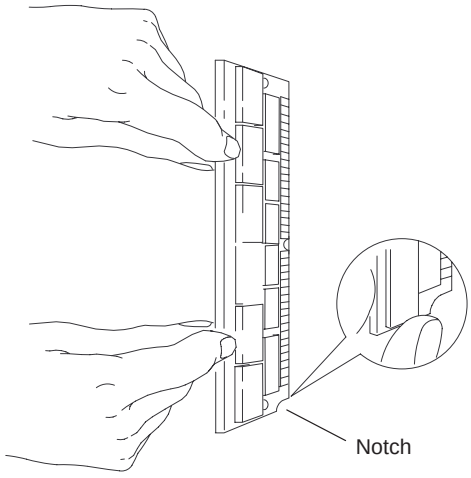
2 Unscrew the SIMM cover at the back of the plotter and remove it.



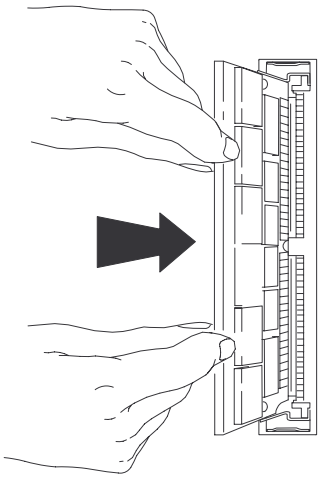
3 Locate the DRAM SIMM slots, using the second from the right first.



4 Hold the module with its nonmetallic edge towards you and the small notch down.



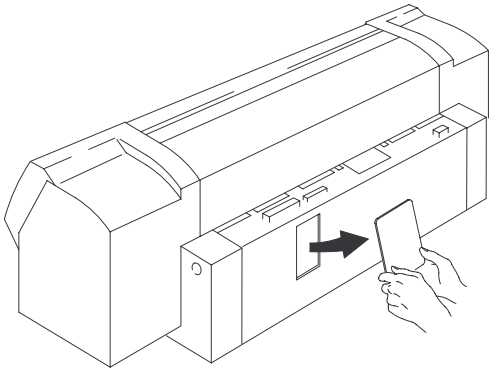
5 Press the nonmetallic edge to the right, and remove the module from the slot.



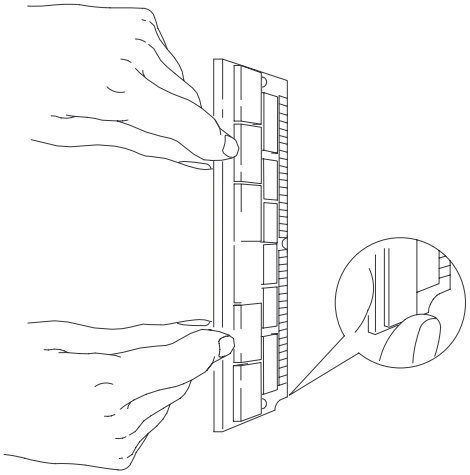
Reinstalling a Memory Module (DRAM/ROM SIMM):

1 Read *ESD Precautions* ➧ page 6-3.

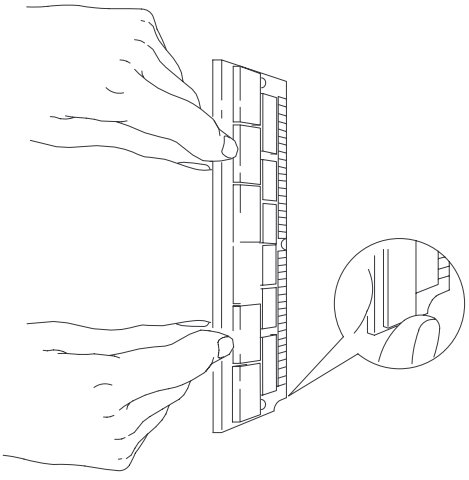
2 Unscrew the SIMM cover at the back of the plotter and remove it.



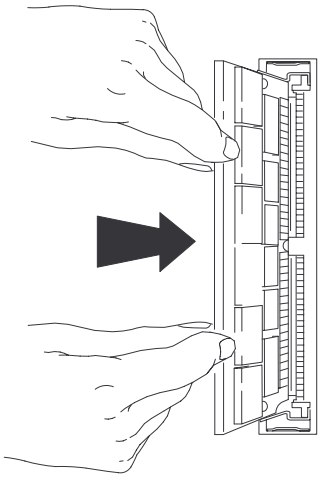
3 Take the memory module out of its bag, holding the module only by the edges.



4 Hold the memory module by its edges with the non-metallic edge toward you and the notch facing down.



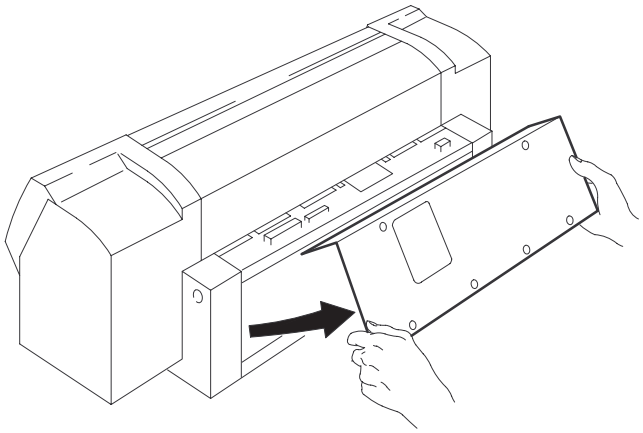
5 Tilt the non-metallic edge rightwards (arrow) and firmly push the module into the slot. Pull the non-metallic edge towards the left until the module clicks into place.



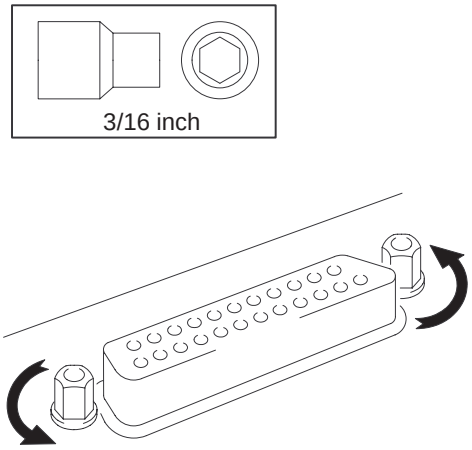
Removing the Main PCA

1 Remove the electronics-enclosure cover ➧ page 6-5.

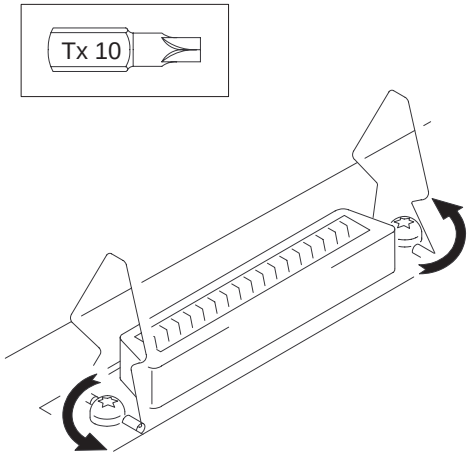
*If you have **PC-based Diagnostics,** save the EEROM data before removing the main PCA. Once you have installed the new PCA, load the EEROM data to the main PCA. For information on **PC-based diagnostics** ➧ page 8-54.*



2 Remove the two screws from the serial (RS-232-C) connector.



3 Remove the two screws from the parallel connector.

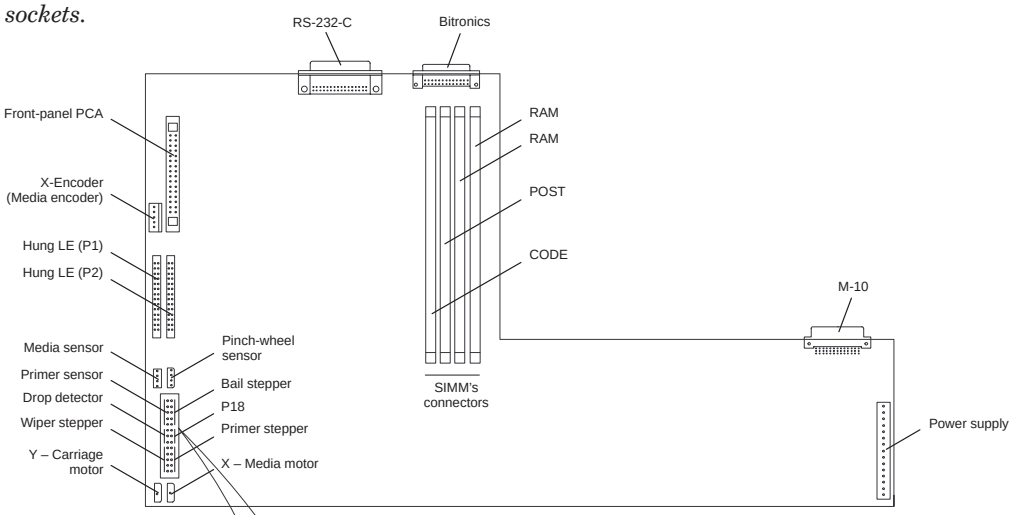


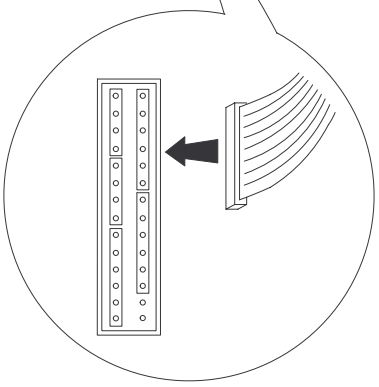
4 Disconnect all cable connectors from the main PCA.

CAUTION

Do not force the front-panel PCA cable out of its clamp. First pull the clamp gently towards you to release the cable; then pull the cable easily out of the clamp.

***Reassembling**: Make sure you connect all cables in the correct orientation and in the correct sockets.*

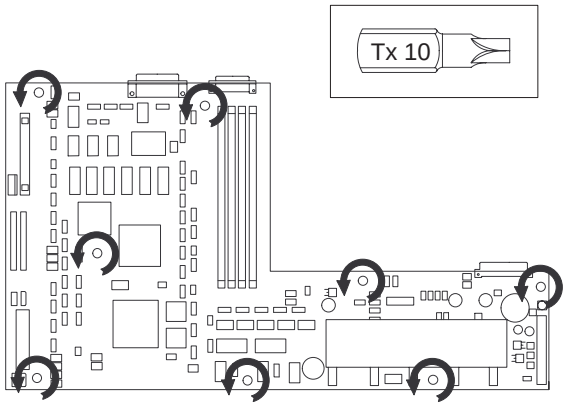




5 Remove the eight screws that secure the main PCA to the electronics enclosure.

***Reassembling**: Temporarily leave the screws loose; tighten the serial and parallel connector screws first; then tighten the PCA screws.*

6 Lift the main PCA clear of the plotter.

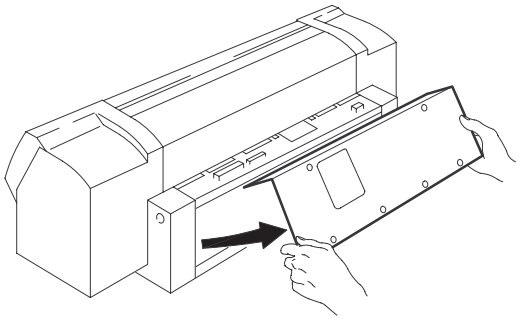


***Calibrations:** After installing a new main PCA, if the EEROM data has not been saved and loaded (see 6-9 note), then the following calibrations must be performed in the order listed:*

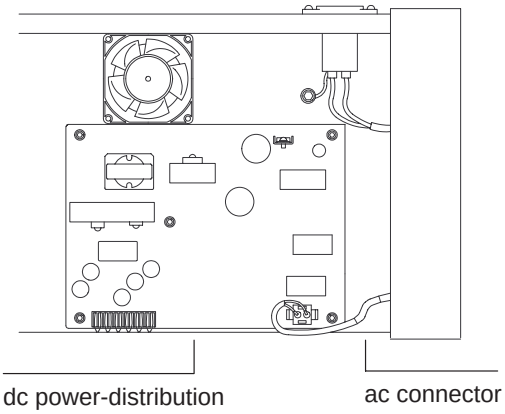
1. Drop-detector calibration ⏵ page 7-4.
2. Line-sensor calibration ⏵ page 7-5.
3. Accuracy calibration ⏵ page 7-6.

Removing the Power-Supply PCA

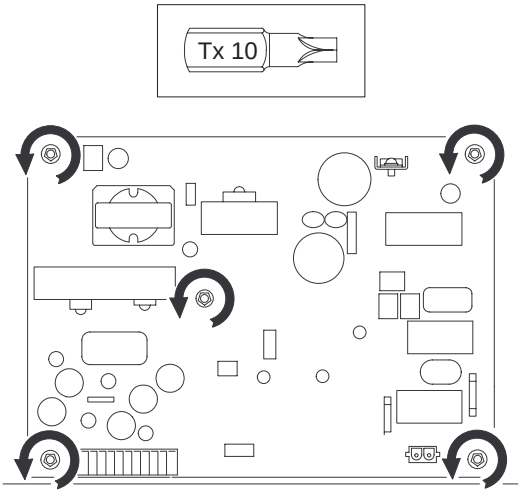
1 Remove the electronics-enclosure cover ➧ page 6-5.



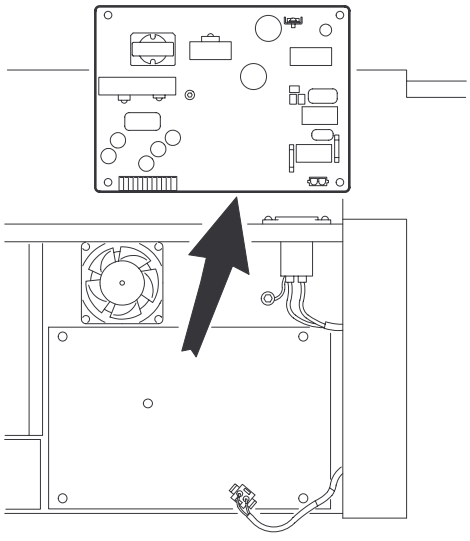
2 Disconnect the ac connector and the dc power-distribution connector from the power-supply PCA.



3 Remove the screws that attach the power-supply PCA to the electronics enclosure.

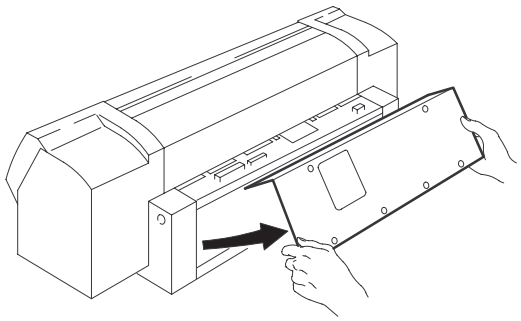


4 Lift the power-supply PCA clear of the plotter.

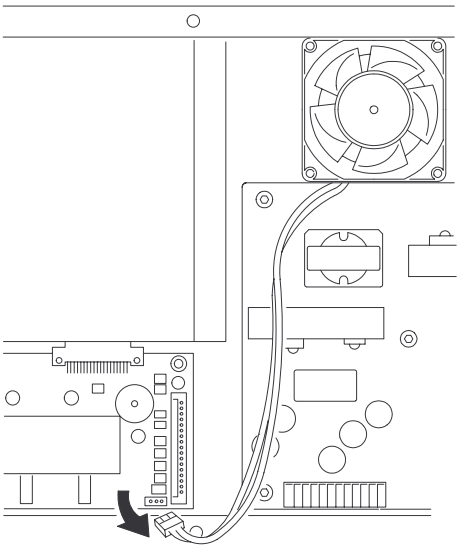


Removing the Fan

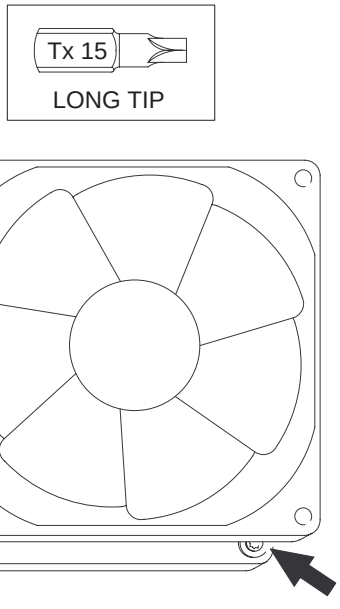
1 Remove the electronics-enclosure cover ⧫ page 6-5.



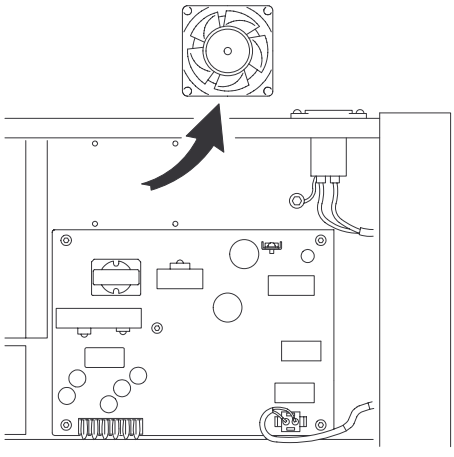
2 Disconnect the fan connector from the main PCA and the attachment clip.



3 Remove the two screws that attach the fan to the electronics enclosure.



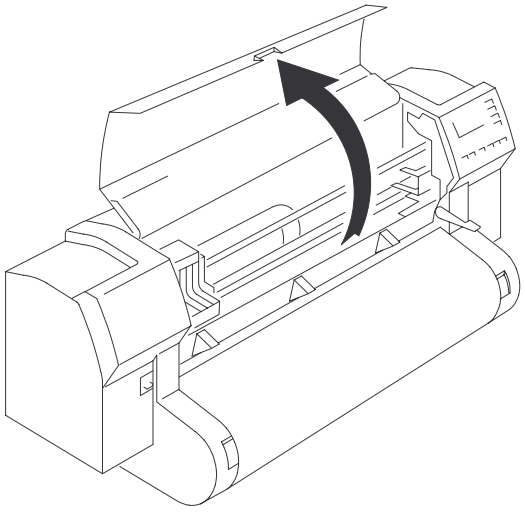
4 Lift the fan clear of the plotter.



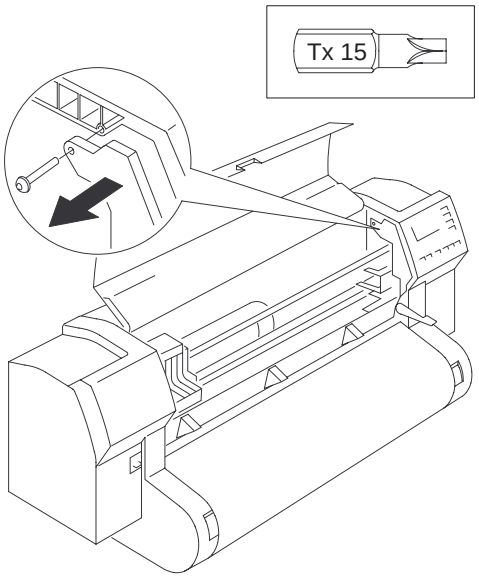
Reassembling: *Airflow should be inwards. See indication on fan.*

Removing the Window

1 Open the window.

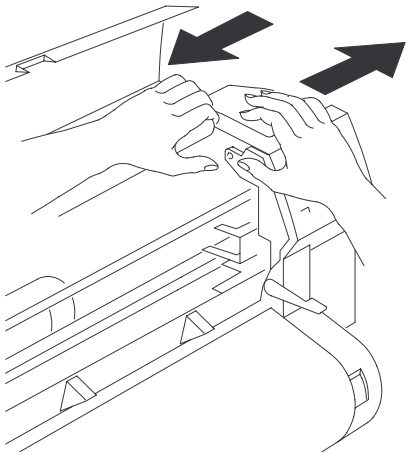


2 **Loosen** the top screw of the right and left front trim (two full turns).



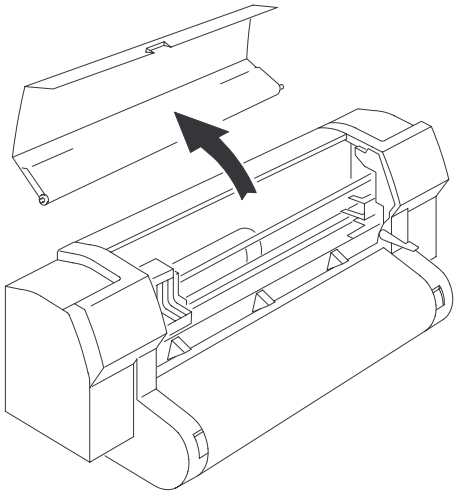
3 Carefully push the right endcover and the window apart, far enough to lift the window up so that the right pivot just clears its socket.

Do not lever the window up more than is necessary, so as not to strain or break the left pivot.



4 Move the window to the right so that the left pivot slides out of its socket. Lift the window clear of the plotter.

Do not let the window-pivot springs drop out of the endcovers.



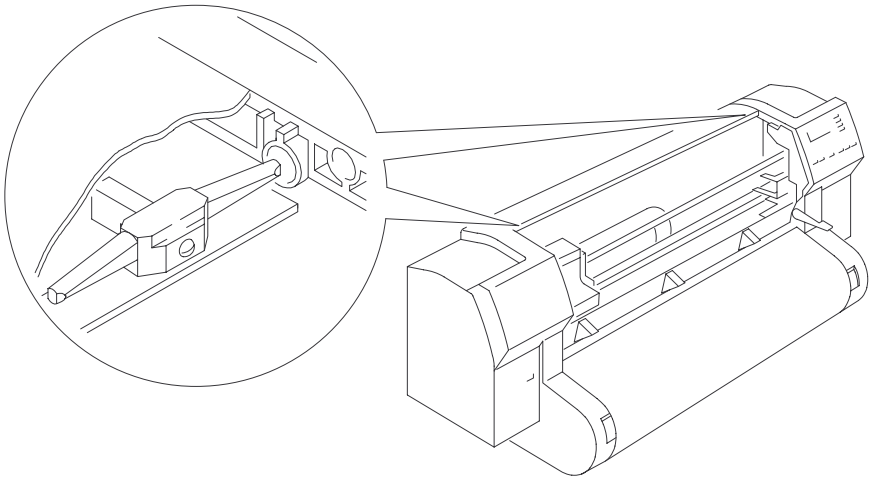
Removing the Center Cover

1 Remove the window ➧ page 6-13.

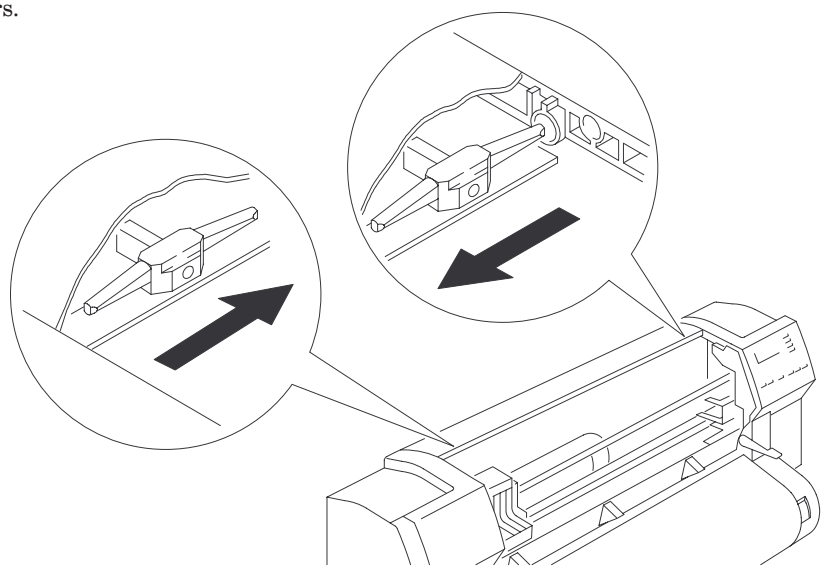
WARNING

In the following steps, take care neither to cut yourself on the encoder strip, nor to damage the strip.

2 Loosen the two latch screws on the underside of the center cover.



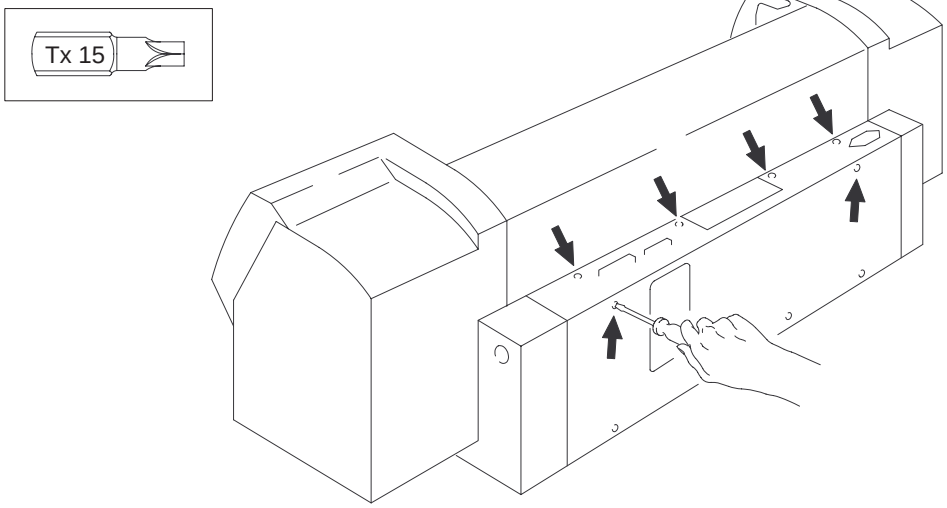
3 Slide the two latches horizontally towards the center of the plotter, clear of the two endcovers.



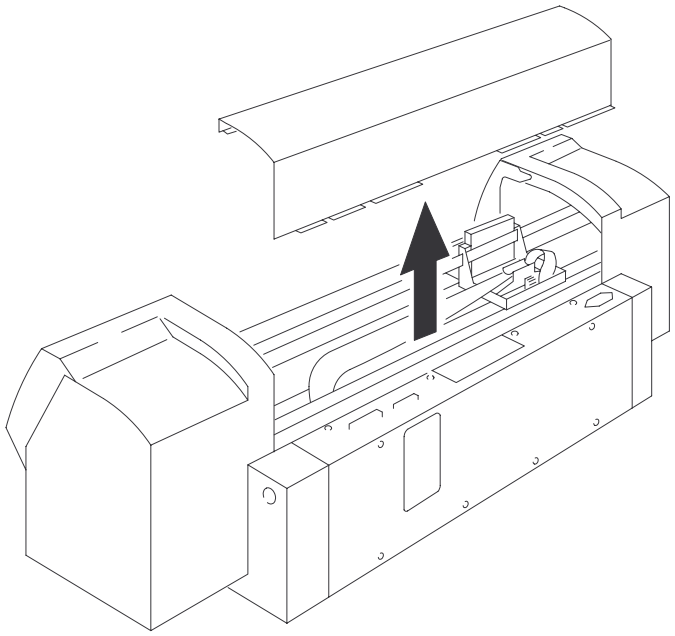
4 Loosen the screws on top of the electronics-enclosure cover and the top two rear screws.

D/A1 size plotters have four screws. E/A0 have six.

When reassembling, first tighten the rear screws.



5 Slide the center cover out from under the screws and lift it clear of the plotter.

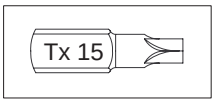


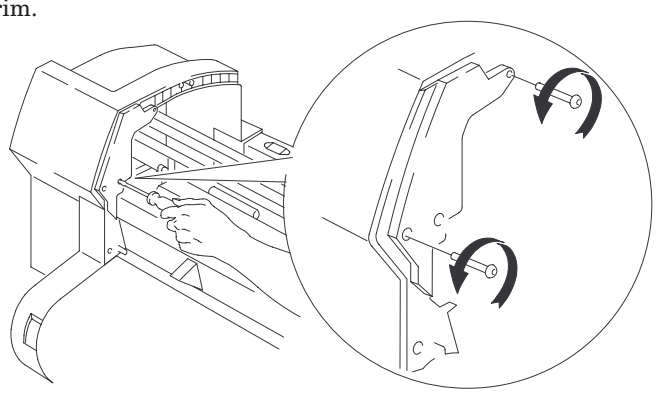
Removing the Left Endcover

1 Remove the window ➧ page 6-13.

2 Remove the center cover ➧ page 6-14.

3 Remove the two screws on the left trim.

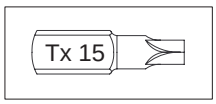


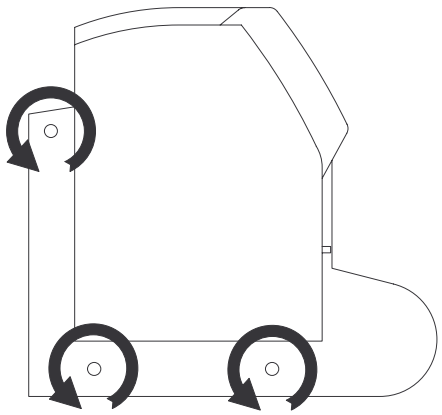


CAUTION

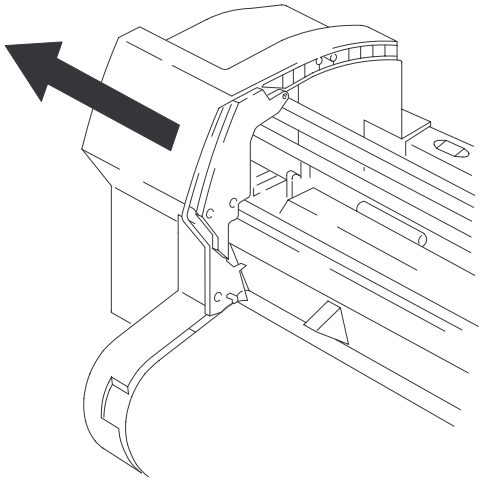
Reassembling: When replacing screws on any plastic part, always begin by gently twisting the screw in an anticlockwise direction with your hand, until the screw finds the thread path and clicks, and then twisting the screw in clockwise with your hand, before using a screwdriver. This is to avoid cross-threading and damaging the threads. Do not over-tighten the screws.

4 Remove the three screws from the left side of the left endcover.





5 Maintaining an even pressure on the top and bottom of the endcover, pull it to the left, away from the plotter.

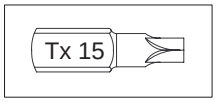


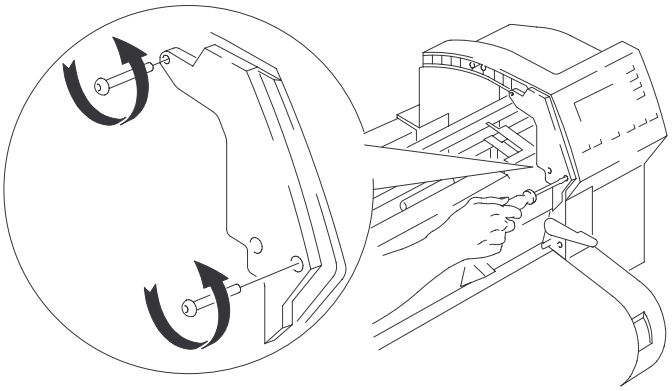
Removing the Right Endcover

1 Remove the window ➧ page 6-13.

2 Remove the center cover ➧ page 6-14.

3 Remove the two screws on the right trim.

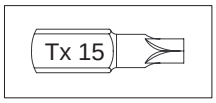


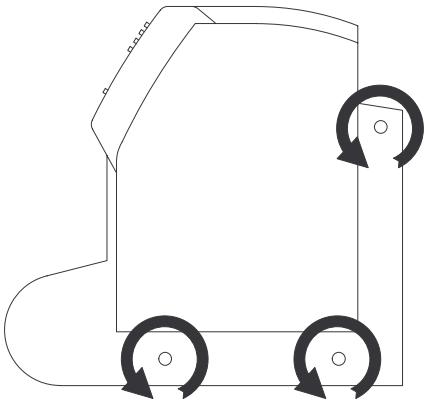


CAUTION

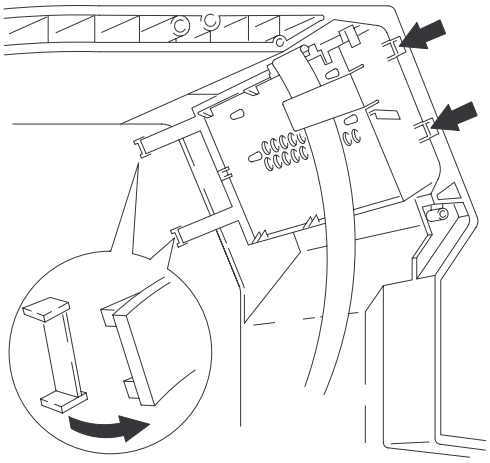
Reassembling: When replacing screws on any plastic part, always begin by gently twisting the screw in an anticlockwise direction with your hand, until the screw finds the thread path and clicks, and then twisting the screw in clockwise with your hand, before using a screwdriver. This is to avoid cross-threading and damaging the thread. Do not over-tighten the screws.

4 Remove the three recessed screws from the right side of the right endcover.





5 Maintaining an even pressure on the top and bottom of the endcover, pull it to the right, away from the plotter.



Reassembling: *Note that the upper and lower grooves of the endcover engage on the front panel.*

Removing the Front-Panel Assembly

1 Remove the electronics-enclosure cover ➧ page 6-5.

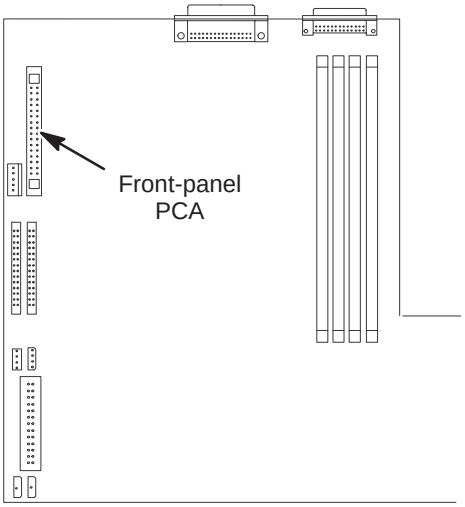
2 Remove the window ➧ page 6-13.

3 Remove the center cover ➧ page 6-14.

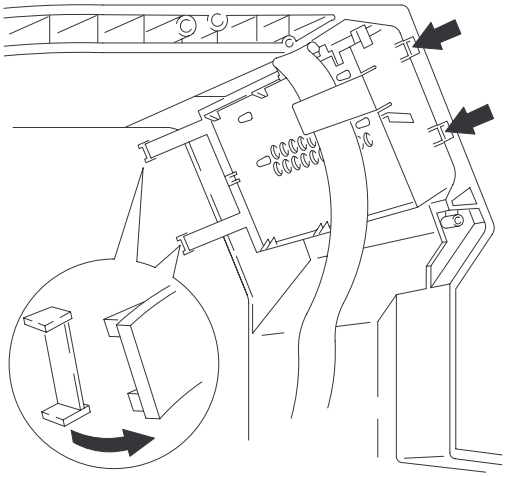
4 Remove the right endcover ➧ page 6-17.

5 Take note of the correct positioning of the front-panel cable for reassembling. Incorrect positioning can cause obstruction of the cartridge carriage or motor gears.

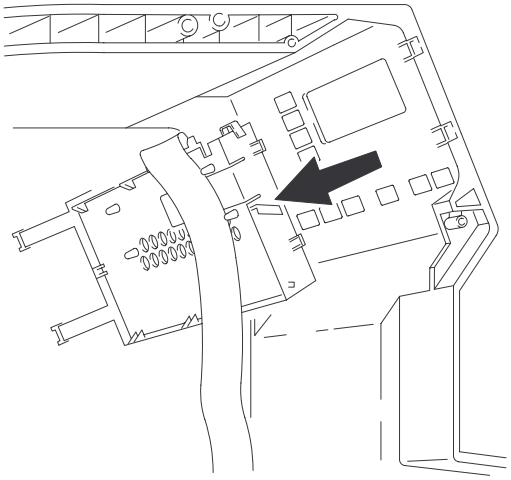
6 Release the front-panel cable from its connector on the main PCA.

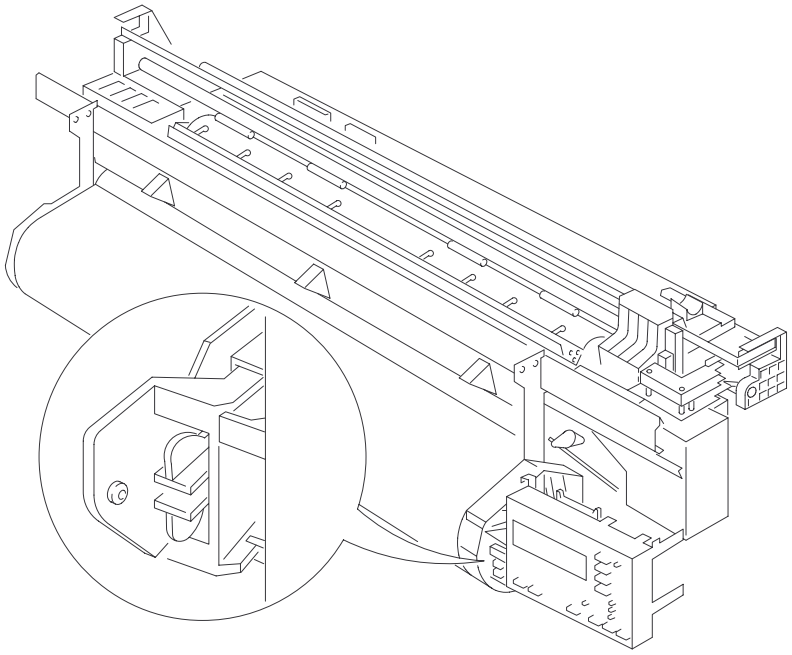


7 Release the front-panel cable by pulling out its holding clips.



8 Lift the Front-Panel Assembly clear of the plotter.





To help with maintenance, push the front-panel assembly onto the right end of the rollfeed where the clamps will hold it in place.

Removing the Window Sensor

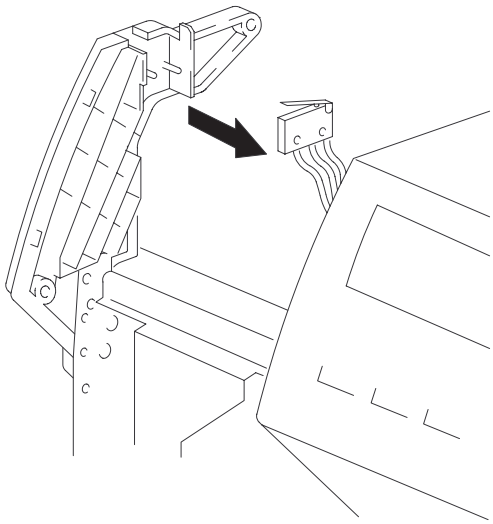
1 Remove the electronics-enclosure cover ➧ page 6-5.

2 Remove the window ➧ page 6-13.

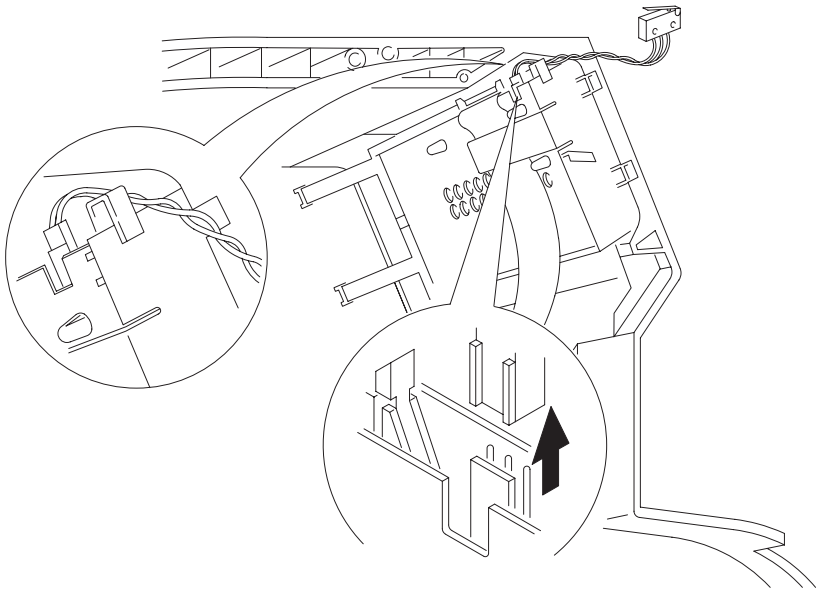
3 Remove the center cover ➧ page 6-14.

4 Remove the right endcover ➧ page 6-17.

5 Slide the connector out from the two pivots.



6 Disconnect the window-sensor cable connector from the front-panel assembly.



Removing the Pinch-Wheel Sensor

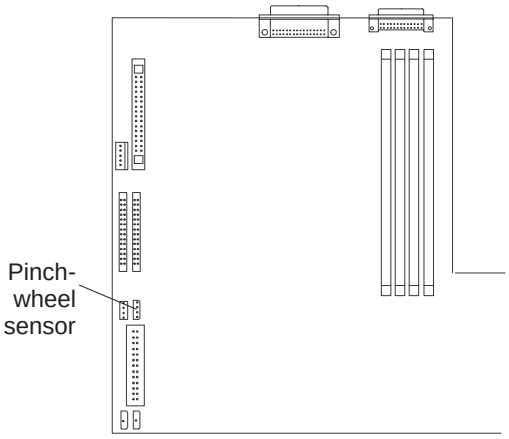
1 Remove the window ➧ page 6-13.

2 Remove the center cover ➧ page 6-14.

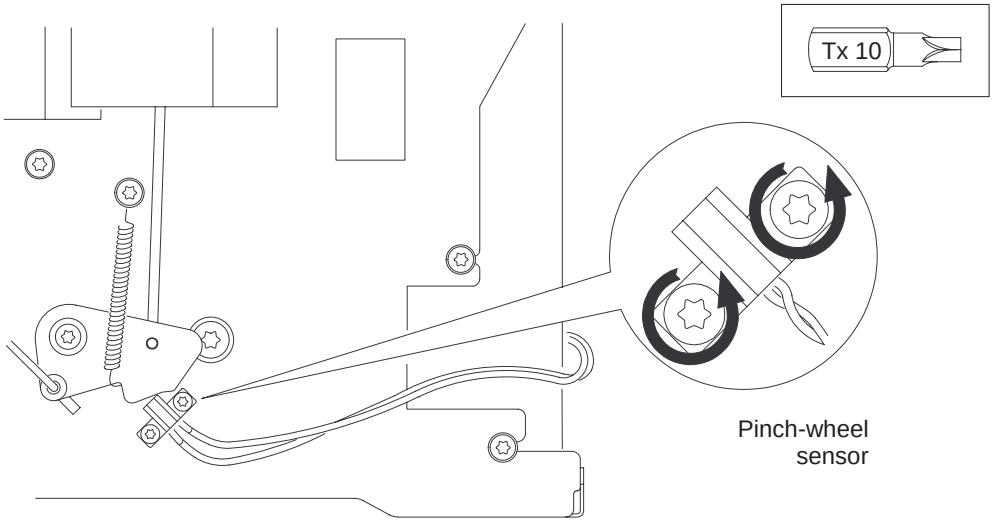
3 Remove the electronics-enclosure cover ➧ page 6-5.

4 Remove the right endcover ➧ page 6-17.

5 Disconnect the pinch-wheel-sensor cable connector from the main PCA.



6 Remove the two screws that attach the pinch-wheel sensor to the right sideplate.



7 Move the pinch-wheel sensor, including the cable, clear of the plotter.

Removing the Media Sensor

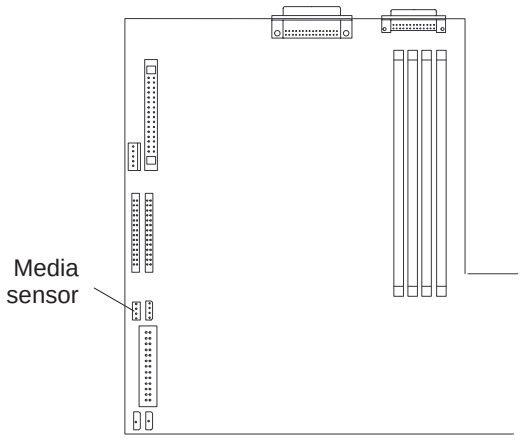
1 Remove the electronics-enclosure cover ➧ page 6-5.

2 Remove the window ➧ page 6-13.

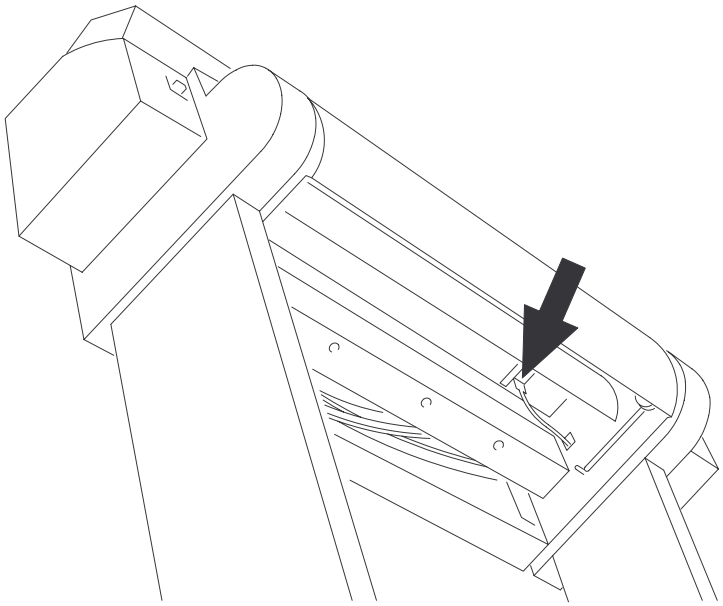
3 Remove the center cover ➧ page 6-14.

4 Remove the right endcover ➧ page 6-17.

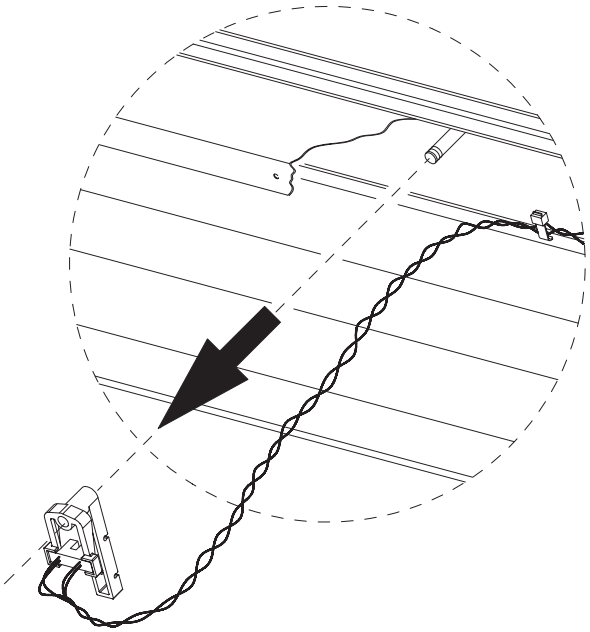
5 Disconnect the media-sensor cable connector from the main PCA.



6 Remove the media bin to make access to the media-sensor easier.



7 Pull the media sensor straight out towards you, freeing it from the underside of the entry platen.



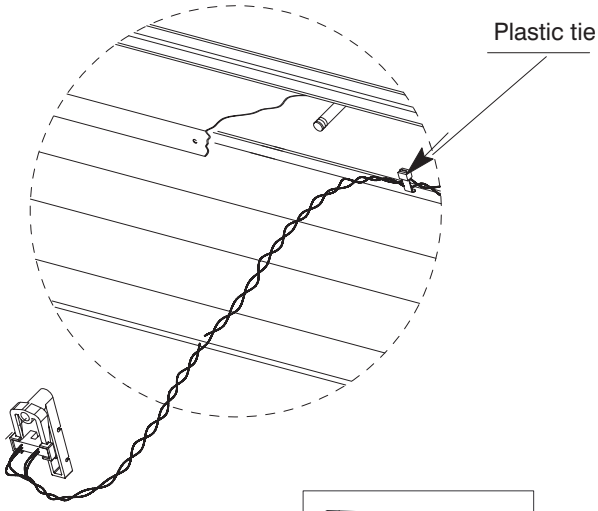
8 Cut the plastic tie that fastens the media-sensor cable to the underside of the entry platen.

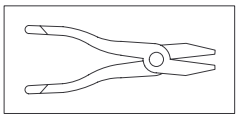
CAUTION

Take care not to cut the media-sensor cable itself.

9 Lift the media sensor and cable clear of the plotter

Reassembling: *Ensure that the two flags on the media sensor are correctly positioned.*





Removing the Carriage (Y-Axis) Motor

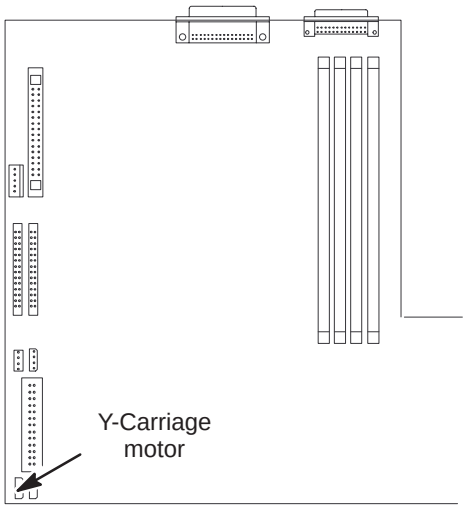
1 Remove the electronics-enclosure cover ➧ page 6-5.

2 Remove the window ➧ page 6-13.

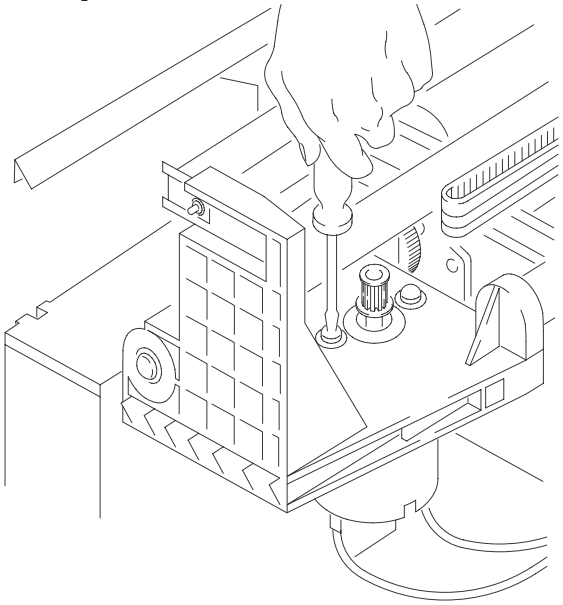
3 Remove the center cover ➧ page 6-14.

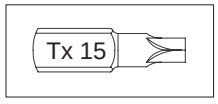
4 Remove the right endcover ➧ page 6-17.

5 Disconnect the carriage-motor cable from the main PCA (connector labelled Y).



6 Remove the two screws that attach the carriage-motor to the structure. Hold the motor in a secure position.





Reassembling: *Position the Y-axis drive belt before positioning the screws, and ensure that the belt is correctly positioned around the carriage-motor gear and the lower part of the pulley.*

Removing the Media (X-Axis) Motor

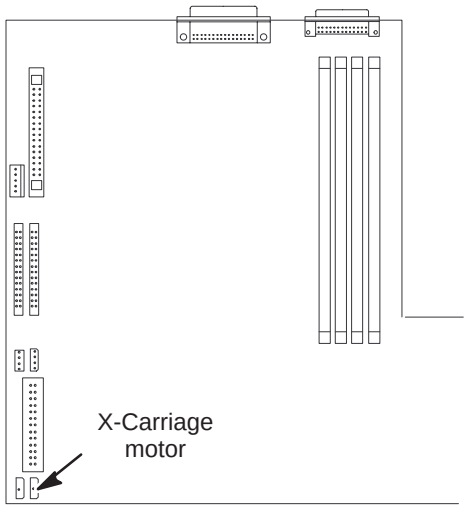
1 Remove the electronics-enclosure cover ➧ page 6-5.

2 Remove the window ➧ page 6-13.

3 Remove the center cover ➧ page 6-14.

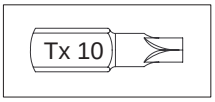
4 Remove the right endcover ➧ page 6-17.

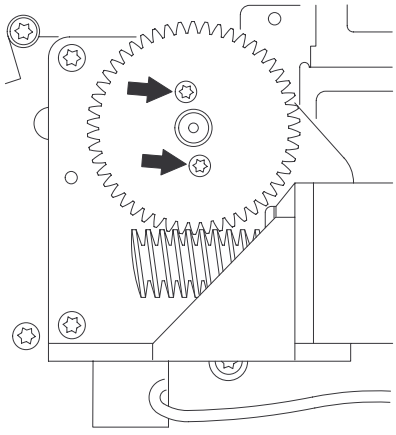
5 Disconnect the carriage-motor cable from the main PCA (connector labelled X).



6 Remove the spittoon ➧ page 6-44.

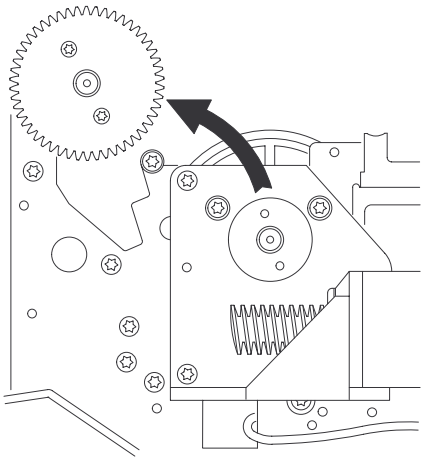
7 Remove the two screws that attach the drive-roller gear to the drive-roller shaft.





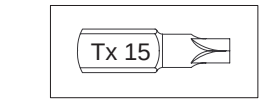
8 Remove the drive-roller gear from the drive-roller shaft.

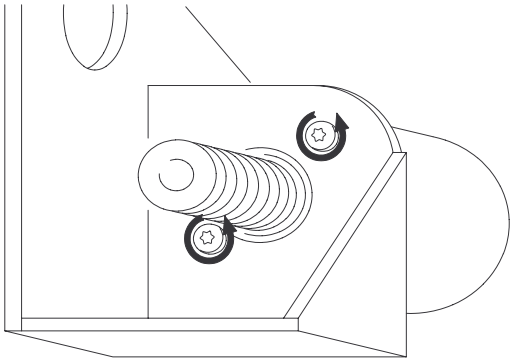
The gear may be stiff to remove.



Reassembling: *Push the gear onto the shaft as far as it will go. Align the holes on the gear with the holes on the shaft.*

9 Remove the two screws that secure the media motor to the media-motor mount.





10 Pull the media motor towards the rear of the plotter.

11 Disconnect the flat encoder cable from the motor, and lift the motor clear of the plotter.

Reinstalling: *The worm pinion and drive-roller gear mesh slightly during use. Do not install a new motor and an old gear, or vice versa:* ***install the gear that comes with the motor****. Apply the grease that comes with the new motor onto the worm pinion and drive-roller gear.*

Calibration: *After reassembling the plotter, perform the accuracy calibration (Details* *➧ page 7-6**).*

Removing the Encoder Strip

WARNING

In the following steps, take care neither to cut yourself on the encoder strip, nor to damage the strip.

CAUTION

The encoder strip is fragile. Do not damage it. Lay it on a flat surface when it is not in the plotter.

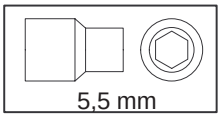
1 Remove the window ➧ page 6-13.

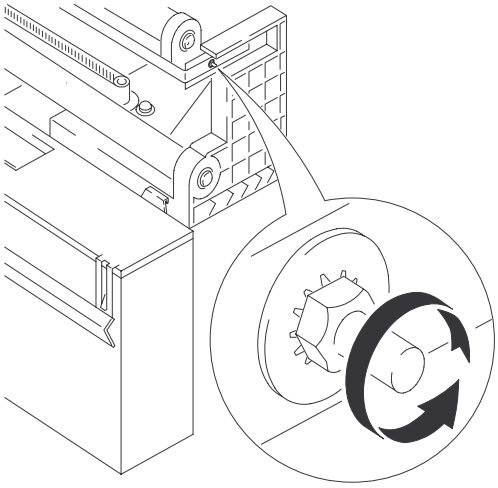
2 Remove the center cover ➧ page 6-14.

3 Remove the right endcover ➧ page 6-17

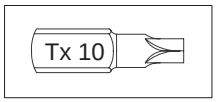
4 Remove the left endcover ➧ page 6-16.

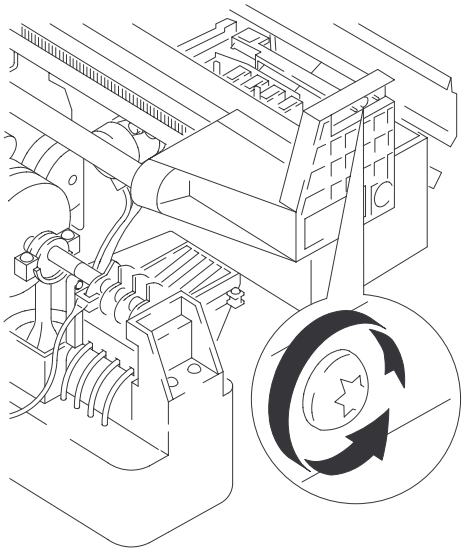
5 Remove the nut and washer that attach the encoder strip to the bracket on the right side of the plotter.



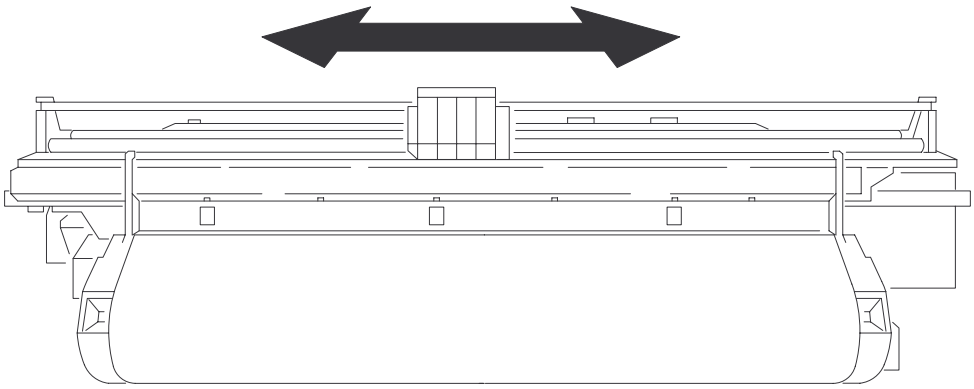


6 Remove the screw and washer that secure the encoder strip to the bracket on the left side of the plotter.





7 Carefully pull the encoder strip through and out of the carriage assembly.

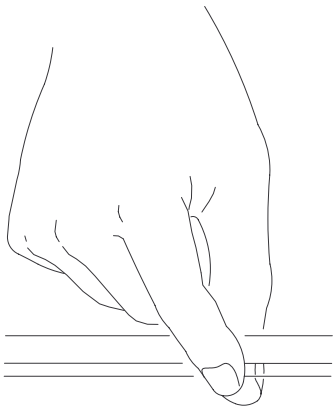


8 Lay the encoder strip on a flat surface.

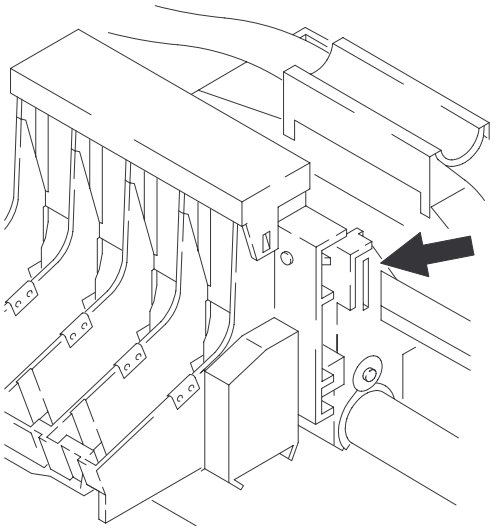
Reinstalling: *See following procedure.*

Reinstalling the Encoder Strip

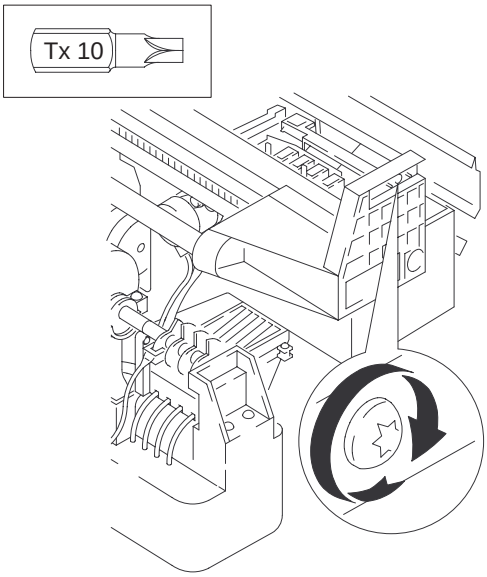
1 Ensure that the encoder strip is oriented with the transparent area down.



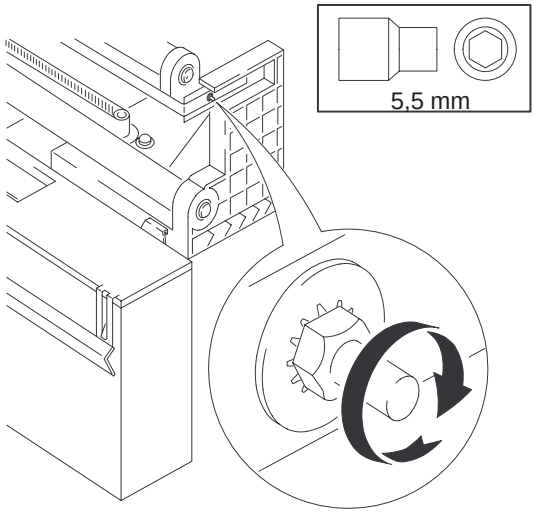
2 Feed the strip through the apertures in the cartridge-carriage assembly.



3 Use a washer and screw to attach the encoder strip to the bracket on the left side of the plotter.



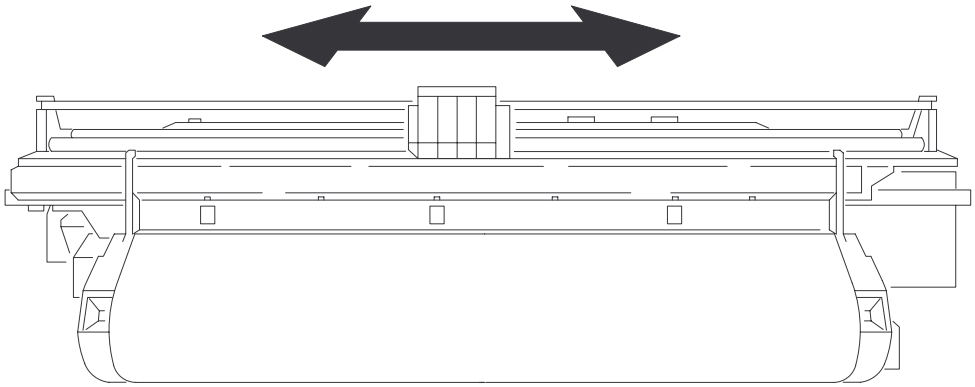
4 Use a washer and screw to attach the encoder strip to the bracket on the right side of the plotter.



Ensure that the metallic tensioner is correctly positioned in the holder.

5 Slide the carriage along the length of its travel to ensure free movement.

Make sure that the encoder strip does not bind or rub on the carriage.



Removing the Y-Tensioner Housing

1 Remove the window ➧ page 6-13.

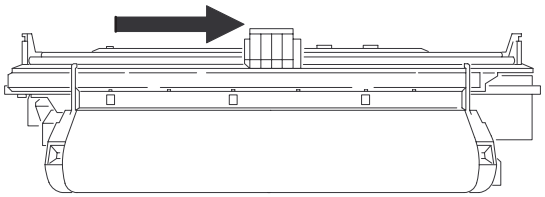
2 Remove the center cover ➧ page 6-14.

3 Remove the left endcover ➧ page 6-16.

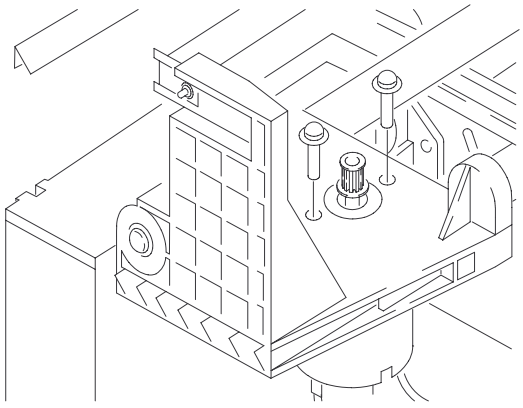
4 Remove the right endcover ➧ page 6-17.

5 Remove the encoder strip ➧ page 6-27.

6 Slide the cartridge carriage towards the center of the plotter to get access to the tensioner.

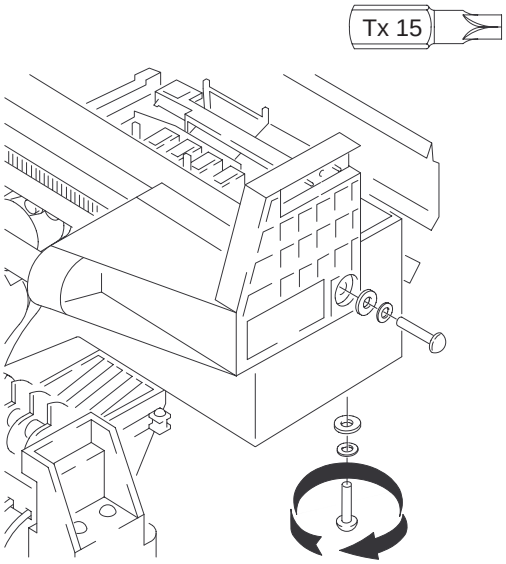


7 Remove the Y-axis motor ➧ page 6-24.



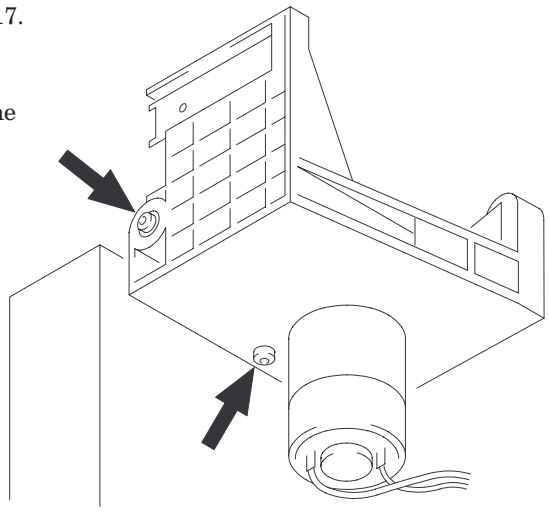
8 Remove the screws that attach the Y-tensioner housing.

9 Remove the Y-tensioner housing.



Removing the Y-Axis Motor Holder

1. Remove the window ➧ page 6-13.
2. Remove the center cover ➧ page 6-14.
3. Remove the right endcover ➧ page 6-17.
4. Remove the Y-axis motor ➧ page 6-24.
5. Remove the two screws that attach the Y-axis motor holder to the structure.
6. Remove the Y-axis motor holder.



Removing the Cutter

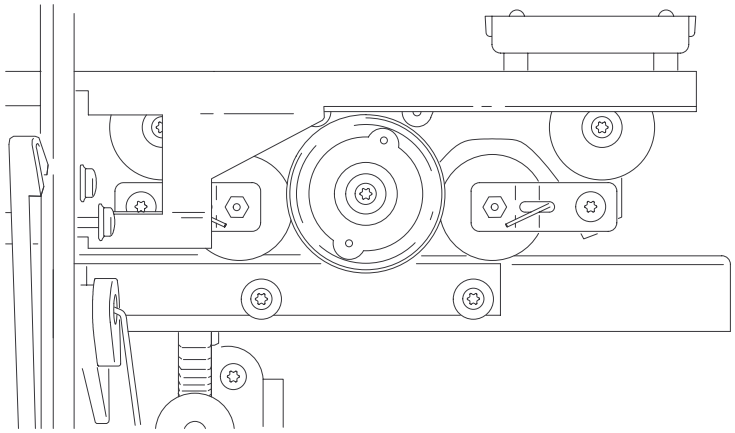
1 Remove the window ➧ page 6-13.

2 Remove the right endcover ➧ page 6-17.

3 Remove the Y-axis motor holder ➧ page 6-32.

4 Holding the cutter wheels in towards the center of the cutter carriage assembly, move the cutter assembly to the right and remove it from the front slider bar.

5 Slowly release the wheels to relax the spring tension on the wheel arms and lift the cutter assembly clear of the plotter.



Reassembling: *Ensure that the cutter is over the overdrive blade.*

Removing the Cartridge Carriage and Drive Belt

1 Remove the window ➧ page 6-13.

2 Remove the center cover ➧ page 6-14.

3 Remove the left endcover ➧ page 6-16.

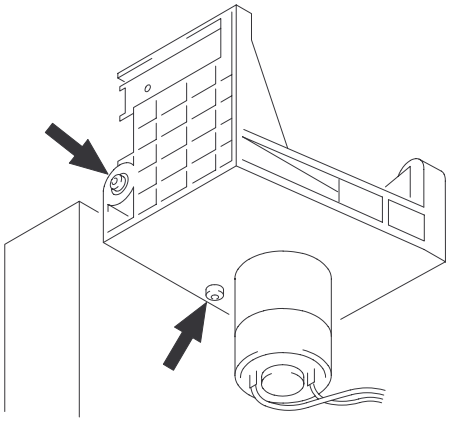
4 Remove the right endcover ➧ page 6-17.

5 Remove the encoder strip ➧ page 6-27.

6 Remove the trailing-cable ➧ page 6-36.

7 Remove the Y-axis motor ➧ page 6-24.

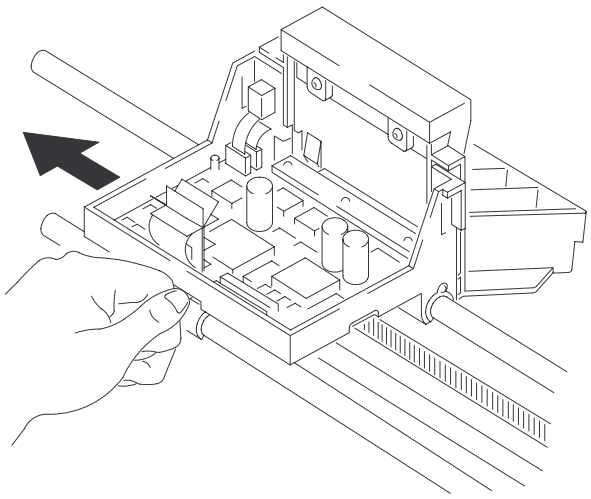
8 Remove the Y-axis motor holder ➧ page 6-32.



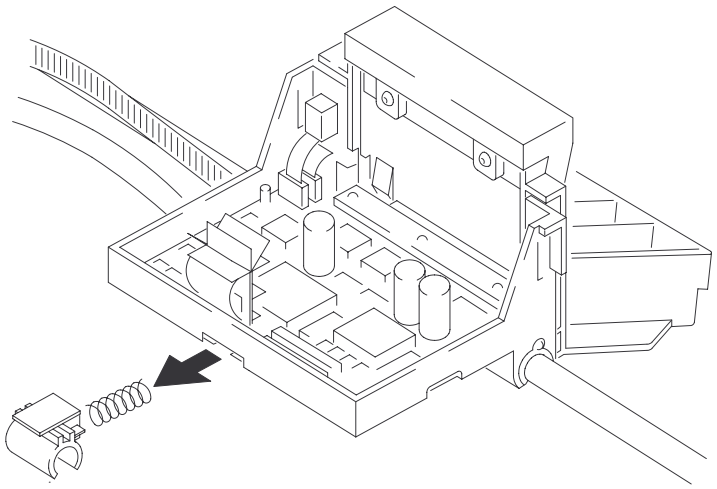
9 Remove the cutter ➧ page 6-33.

10 Slide the cartridge carriage to the right side of the plotter.

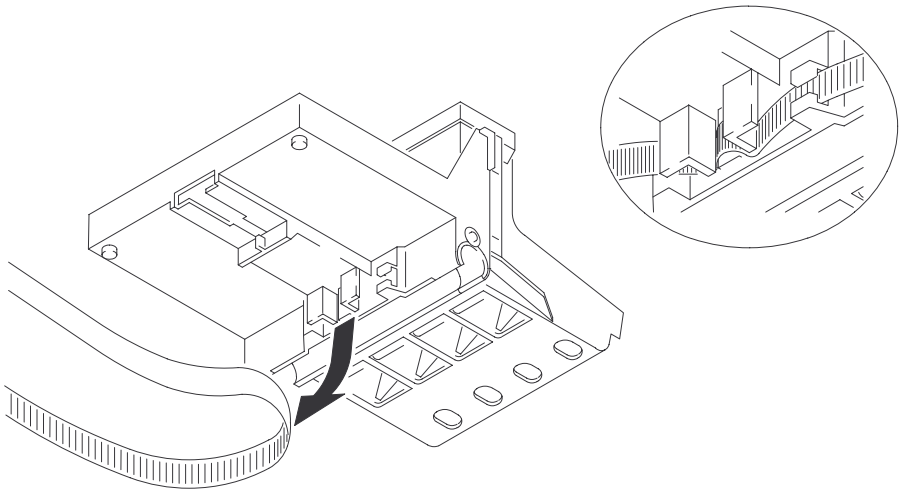
11 Hold the carriage rear bushing (mounted on the rear slider rod) and move the carriage to the right side of the plotter and free from the slider rods.



12 Separate the rear bushing and spring from the carriage assembly and carefully remove the carriage assembly and main drive belt from the plotter.



13 Remove the drive belt from the carriage assembly.



Calibration: *After reassembling the plotter, perform:*

- *Pen alignment test* ⏵ *page 8-40.*
- *Line-sensor calibration* ⏵ page 7-5.
- *Accuracy calibration* ⏵ page 7-6.
- *Drop-detect calibration* ⏵ *page 7-4.*

Removing the Trailing Cable

1 Remove the window ➧ page 6-13.

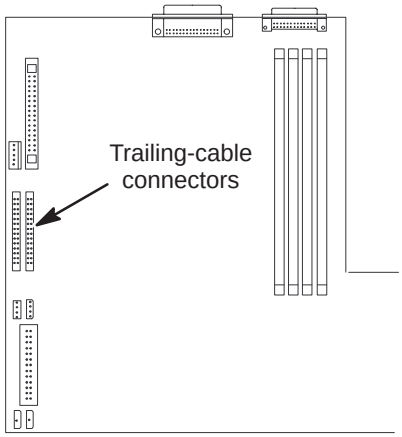
2 Remove the center cover ➧ page 6-14.

3 Remove the electronics-enclosure cover ➧ page 6-5.

4 Remove the left endcover ➧ page 6-16.

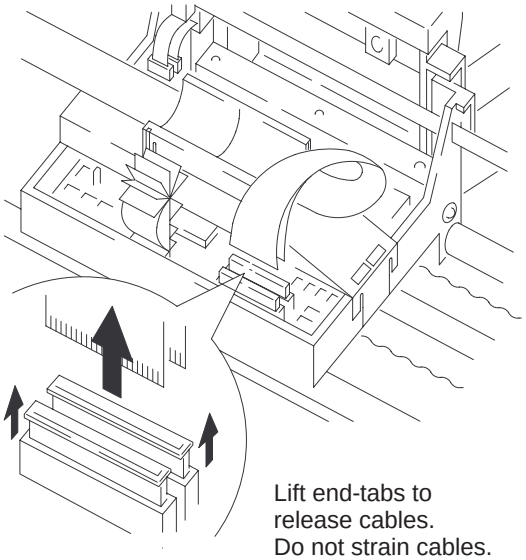
5 Remove the right endcover ➧ page 6-17.

6 Disconnect the trailing-cable connector from the main PCA, using needle nose pliers.

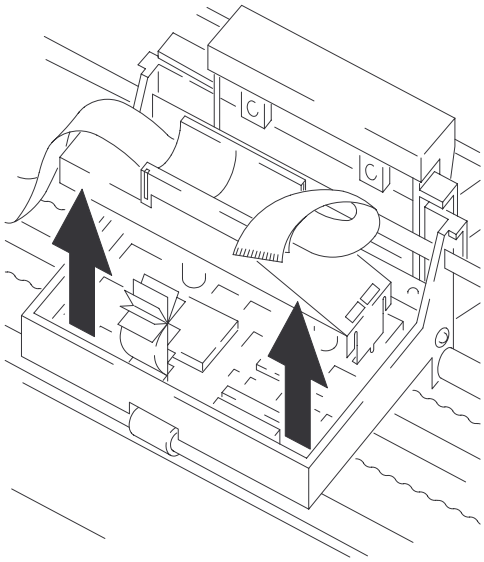


***Reassembling**: The connector will have the lever up. Put the cable into the connector. Lower the lever, making sure that the cable is positioned correctly.*

7 Use needle nose pliers to disconnect the trailing-cable connectors from the carriage PCA.

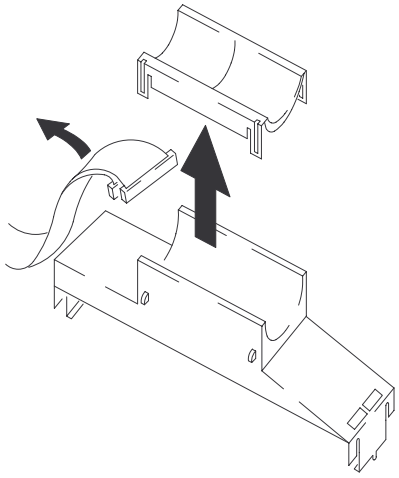


8 Remove the cable guide from the carriage PCA by pulling the sides out to unclip them and lifting the strip.



9 Remove the trailing-cable guide clip by pressing out its legs.

10 Gently force apart one corner of the guide and the trailing cable. This will release the cable from the retaining mechanism at that corner. Repeat for the other three corners.

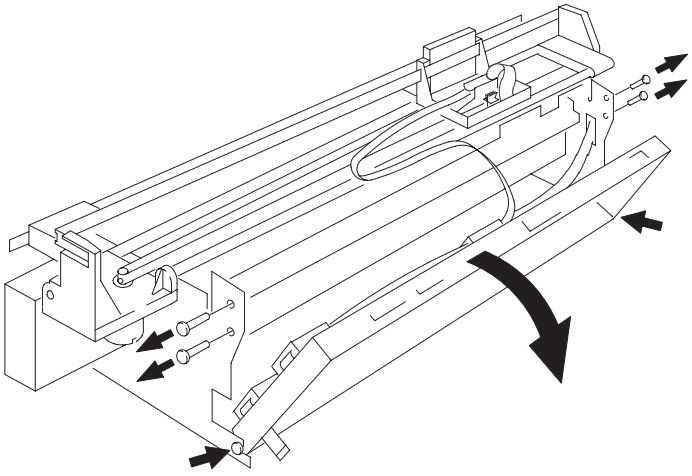


In order to access the trailing cable behind the electronics enclosure, perform the following steps:

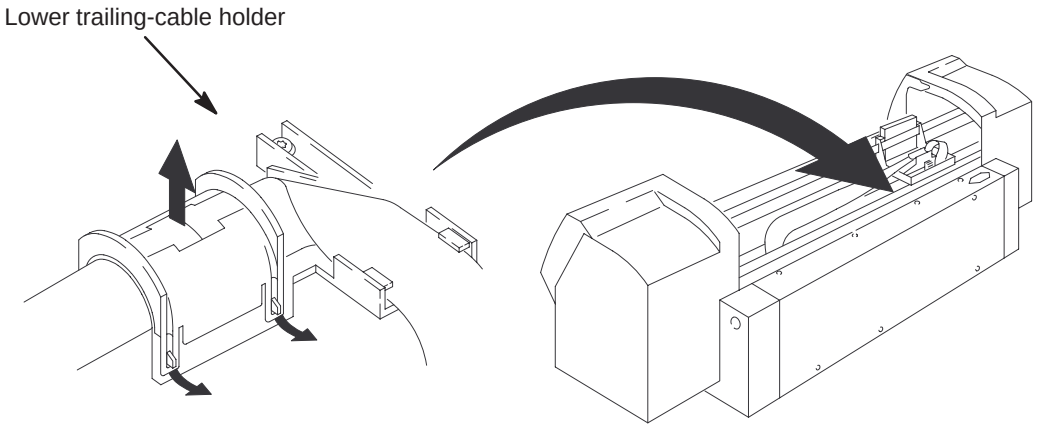
11 Remove the screw that attaches the trailing cable holder to the chassis.

12 Disconnect the following cables from the Main PCA: front-panel cable, X-axis motor encoder-cable, trailing cable, pinch-wheel sensor and media sensor cables, and X-axis motor and Y-axis motor cables.

13 Remove the two upper screws that attach the electronics enclosure to the sideplates from both the right and left sides, and loosen the two bottom screws. Swing the electronics enclosure outwards on its hinges. Release the trailing cable passing it through the ferrites.



14 Remove the clip from the lower trailing cable holder.



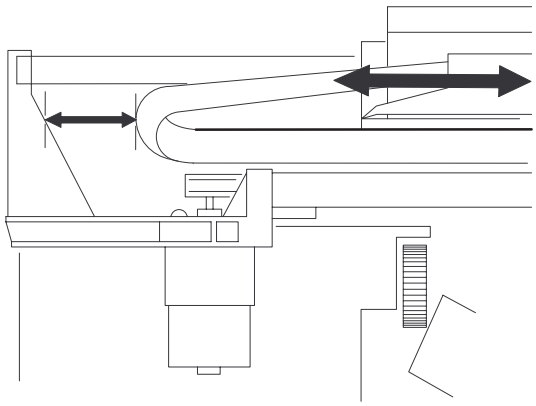
Reinstalling the Trailing Cable

Reinstall the trailing cable following the previous steps in the reverse sequence. After reinstalling, two adjustments are required to ensure correct functionality:

LENGTH ADJUSTMENT

1 Move the carriage to the maximum right-end position (interacting with the Y-axis motor holder).

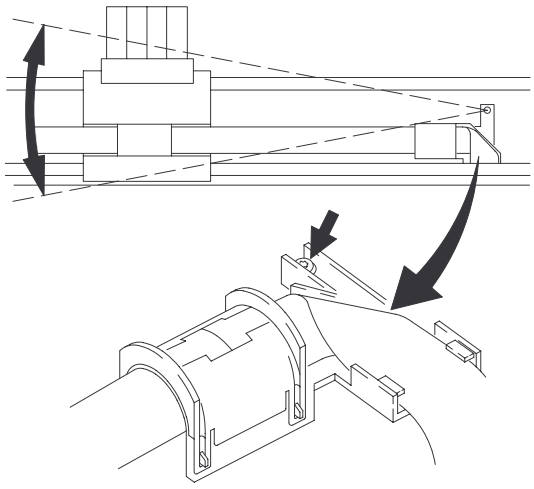
2 Release the trailing-cable clip on the carriage, and adjust the length of the trailing cable to avoid interaction with the Y-axis motor holder. The minimum distance between the trailing cable and the holder should be 0.5 cm.



ANGULAR ADJUSTMENT

1 Loosen the screw that attaches the lower trailing-cable holder to the chassis.

2 Perform the angular adjustment to align the trailing cable with the slider rods and belt.



Removing the Starguard Assembly

1 Remove the window ➧ page 6-13.

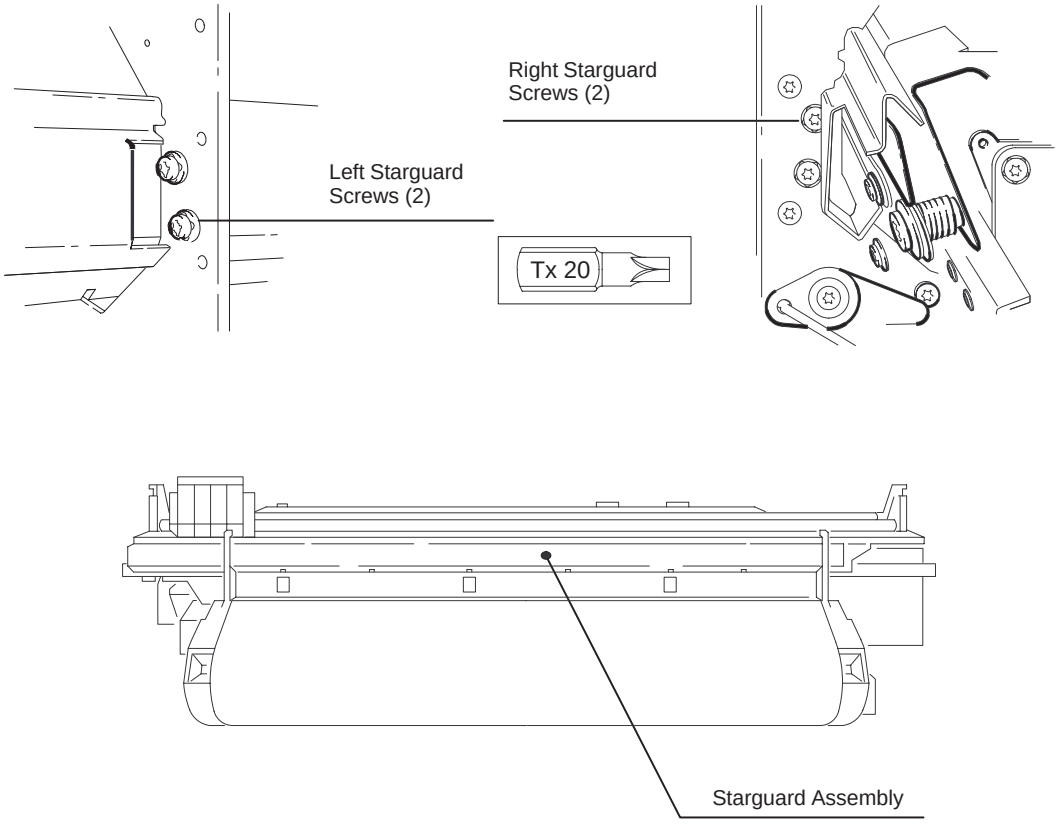
2 Remove the left endcover ➧ page 6-16.

3 Remove the right endcover ➧ page 6-17.

4 Remove the cutter ➧ page 6-33.

5 Loosen the two upper screws that attach the starguard assembly to the left and right sideplates until the ends of the screws are flush with the inner surfaces of the sideplates.

6 Rotate the top of the starguard assembly toward the rear of the plotter so that it clears the sideplate.

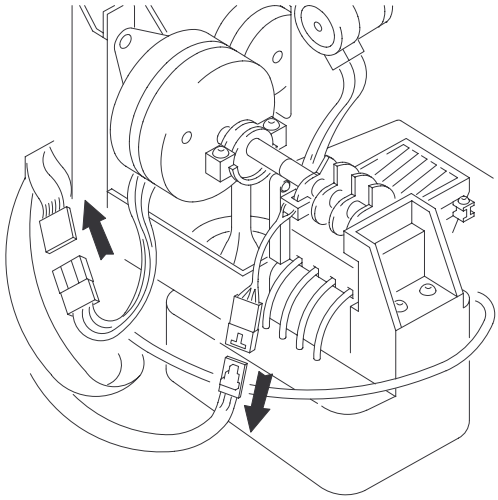


Removing the Primer

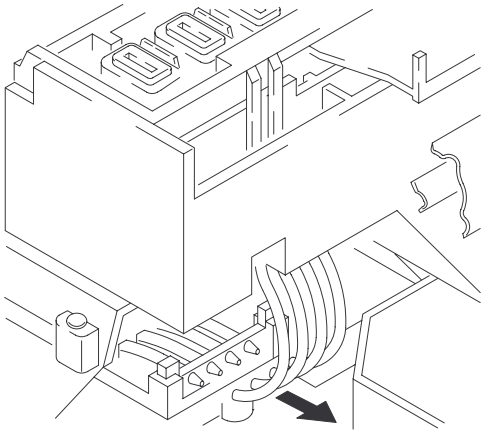
1 Remove the window ⧫ page 6-13.

2 Remove the left endcover ⧫ page 6-16.

3 Disconnect the primer assembly and sensor cable connectors.

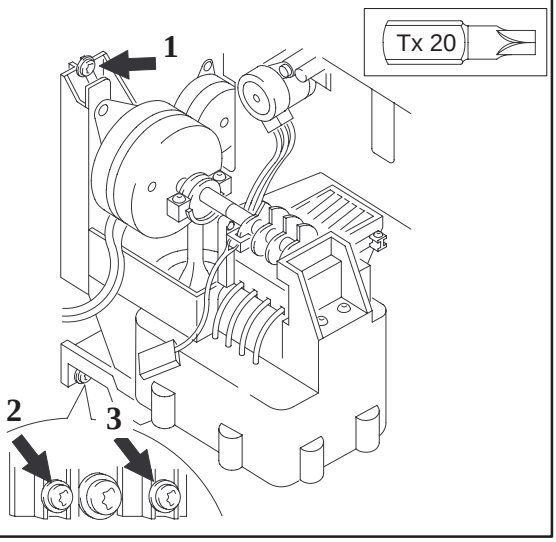


4 Disconnect the four rubber tubes from the primer assembly.



5 Loosen the bottom screws and remove the top screw that attaches the primer assembly to the left sideplate.

6 Slide the primer assembly out of the plotter.



Removing the Service Station

When performing this procedure, be careful to avoid staining your hands and clothing with ink deposited in the service station.

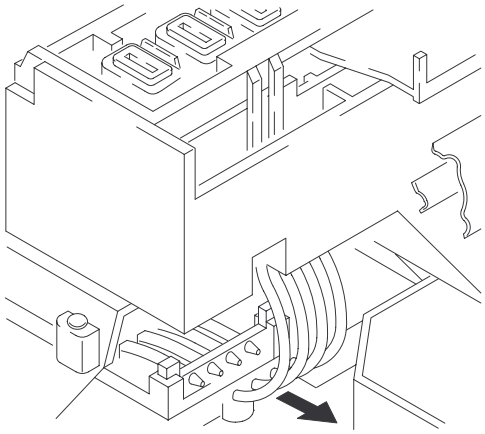
1 Remove the window ➧ page 6-13.

2 Remove the center cover ➧ page 6-14.

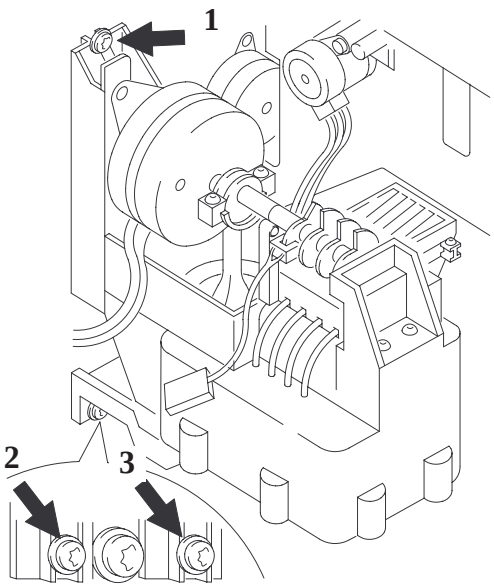
3 Remove the left endcover ➧ page 6-16.

4 Move the cartridge carriage to the center of the plotter.

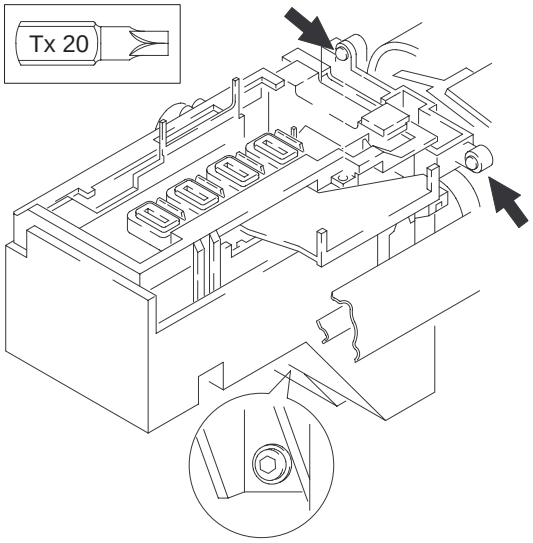
5 Disconnect the four rubber tubes from the primer assembly.



6 Remove the primer



7 Remove the three screws that attach the service-station housing to the left sideplate.

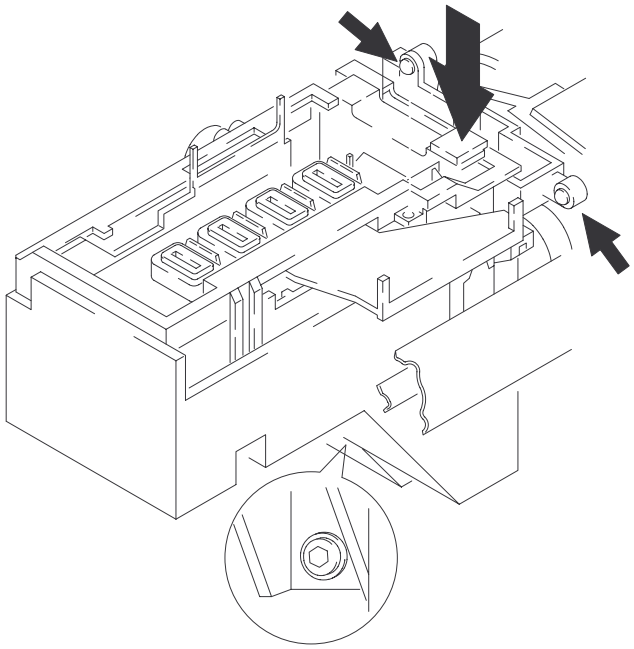


WARNING

Do not turn upside down. The spittoon may be full of ink.

Reassembling:

1. *Install the two upper screws leaving them loose.*
2. *Press down on the sloping plastic and tighten the left upper screw as shown. Prevent any slackness or motion of the service station while it is being screwed in place. This is very important.*
3. *Tighten the right upper screw.*
4. *Install the bottom screw.*



WARNING

Be careful not to damage the self-torque screws or place them incorrectly

Calibration: *After reassembling the plotter, perform:*

- *Accuracy calibration* ⏵ page 7-6.
- *Drop-detect calibration* ⏵ *page 7-4.*

Removing the Spittoon

1 Remove the window ➧ page 6-13.

2 Remove the center cover ➧ page 6-14.

3 Remove the right endcover ➧ page 6-17.

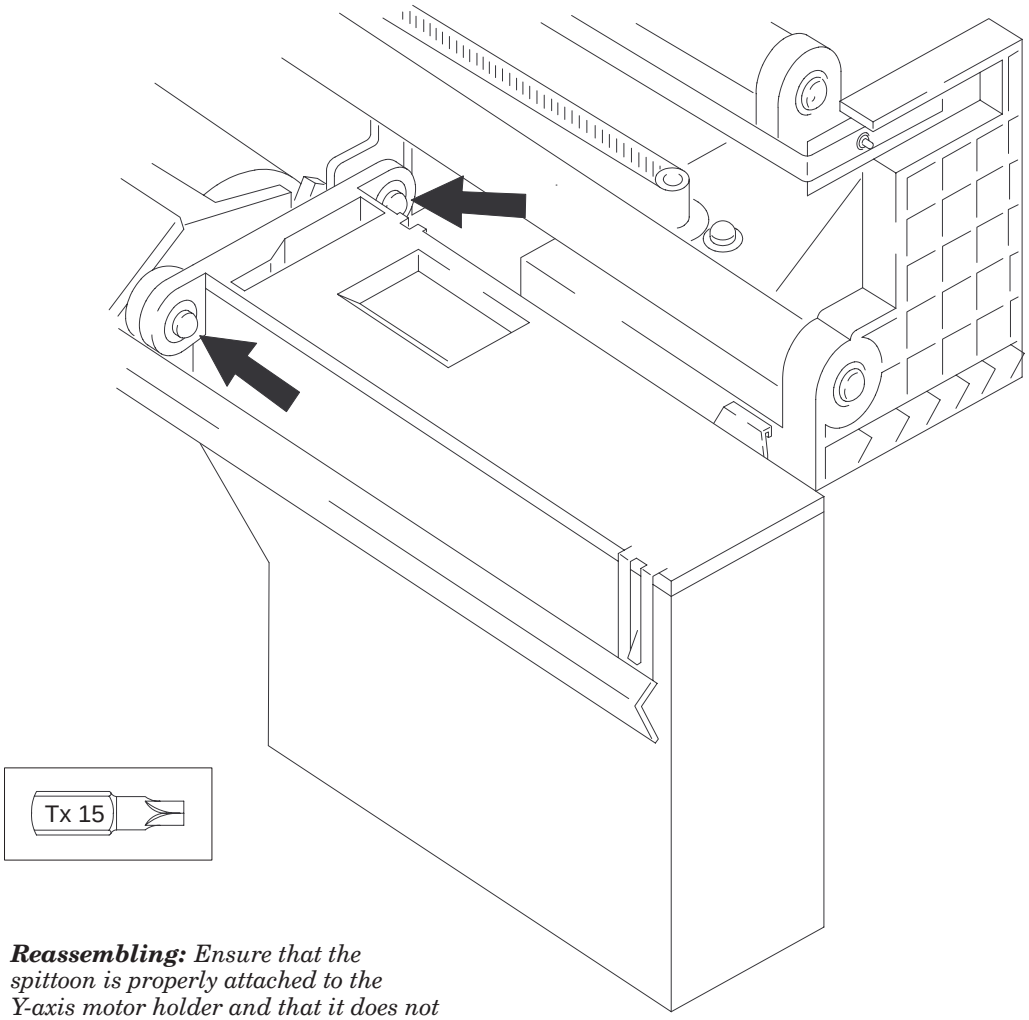
4 Identify the location of the spittoon.

WARNING

Do not turn up-side down. The spittoon may be full of ink.

5 Remove the screws that attach the spittoon to the structure.

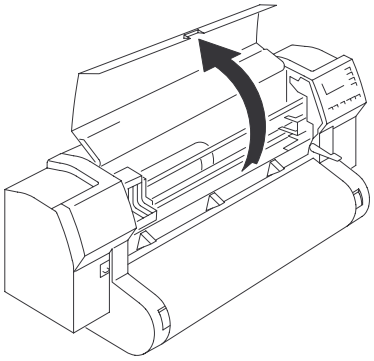
6 Remove the spittoon.



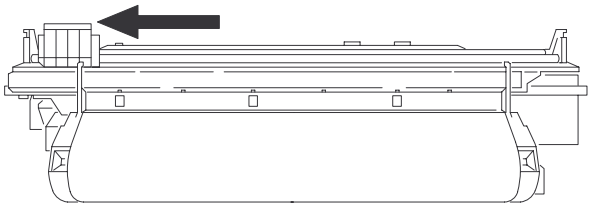
Reassembling: *Ensure that the spittoon is properly attached to the Y-axis motor holder and that it does not interact with the cartridge carriage.*

Removing the Bail Assembly

1 Open the window.



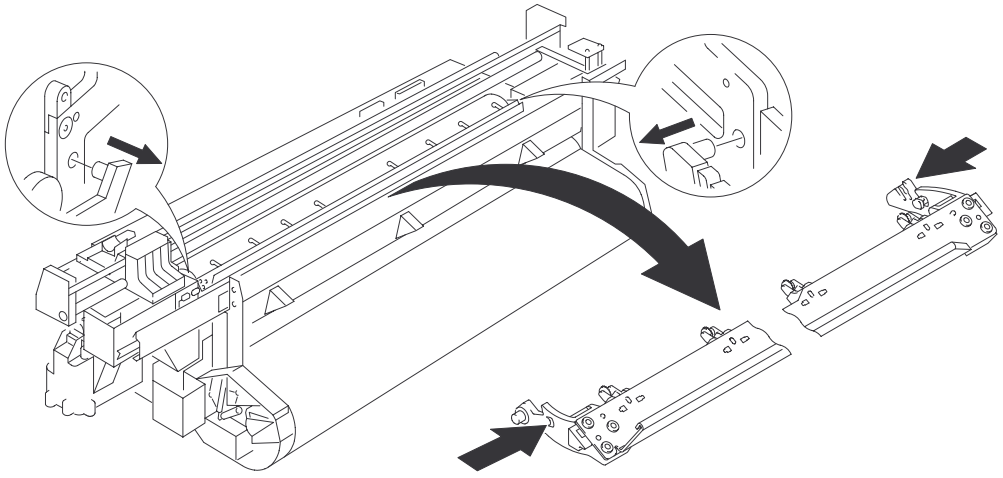
2 Move the cartridge-carriage to the left side of the plotter.



WARNING

In the following step, take care not to cut yourself on the encoder strip.

3 Push both of the plastic ends of the bail assembly towards each other to release them from the holes in the sideplates. Lift the bail assembly up and clear of the plotter.



Removing the Bail Stepper Motor

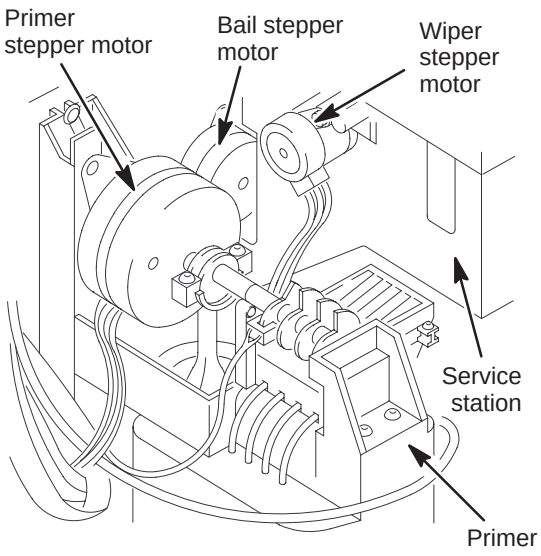
1 Remove the window ➧ page 6-13.

2 Remove the left endcover ➧ page 6-16.

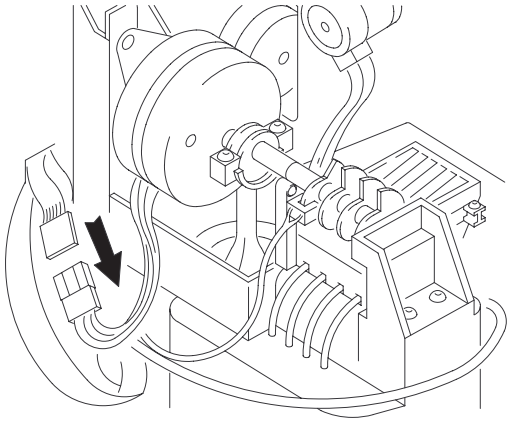
3 Remove the primer ➧ page 6-41.

4 Remove the service station ➧ page 6-42.

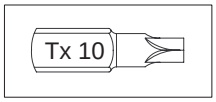
5 Locate the three stepper motors.

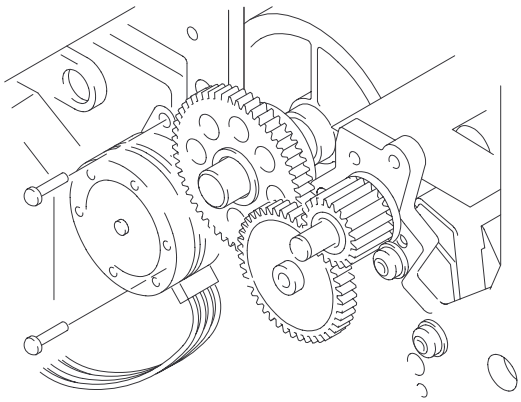


6 Disconnect the short motor cable from the cable assembly to the main PCA.



7 Remove the two retaining screws. Remove the motor, being careful not to force any gear engagements.

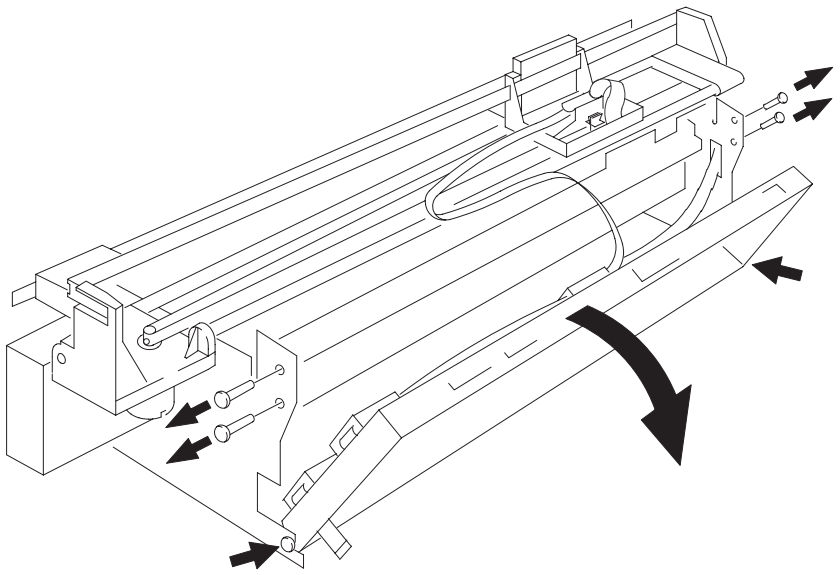




Reassembling: *Rest the bottom arm of the linkage on top of the stepper-motor shaft.*

Removing the Cable Assembly

1. Remove the window ⧫ page 6-13.
2. Remove the center cover ⧫ page 6-14.
3. Remove the electronics enclosure cover ⧫ page 6-5.
4. Remove the right endcover ⧫ page 6-17.
5. Remove the left endcover ⧫ page 6-16.
6. Remove the main PCA ⧫ page 6-9.
7. Remove the screw that attaches the trailing-cable holder to the chasis.
8. Remove the two upper screws that attach the electronics enclosure to the side plates. Loosen the two bottom screws.
9. Swing the electronics enclosure outwards on its hinges.
10. Release the cable assembly.



Removing the Overdrive Assembly

1 Remove the window ➧ page 6-13.

2 Remove the center cover ➧ page 6-14.

3 Remove the left endcover ➧ page 6-16.

4 Remove the right endcover ➧ page 6-17.

5 Remove the bail assembly ➧ page 6-45.

6 Remove the encoder strip ➧ page 6-27.

7 Remove the carriage (Y-axis) motor ➧ page 6-16.

8 Remove the Y-axis motor holder ➧ page 6-32.

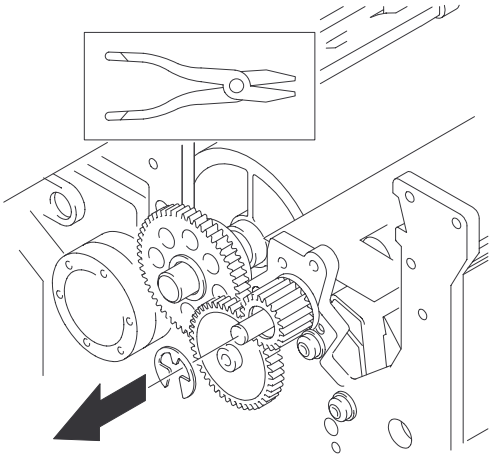
9 Remove the cutter ➧ page 6-33.

10 Remove carriage ➧ page 6-34.

11 Remove the primer ➧ page 6-41.

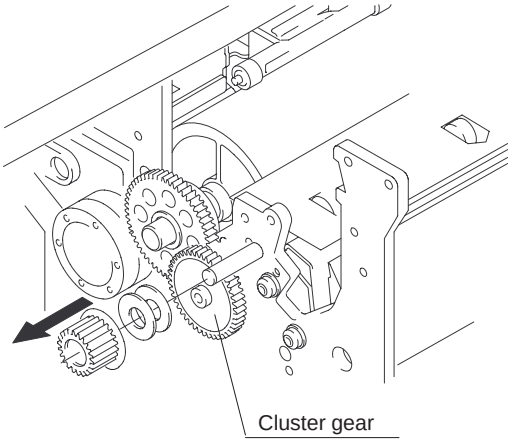
12 Remove the service station ➧ page 6-42.

13 Remove the clutch retaining ring that secures the overdrive clutch to the overdrive roller.



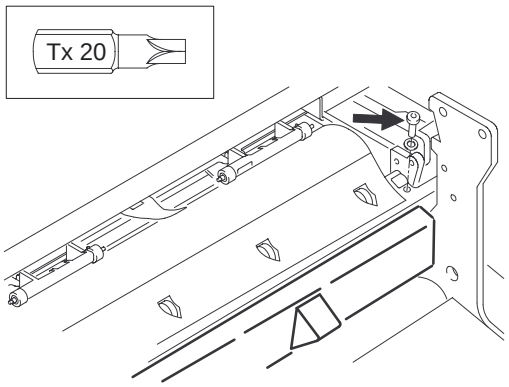
14 Remove the clutch and washers

15 Remove the overdrive cluster gear from the plotter.



Reassembling: *Ensure that you install the clutch as shown in the figure. If you install it in reverse, it will cause ink-smearing and paper jam problems.*

16 Remove the screw from the top of each of the overdrive support mounts.



17 Pull the right side of the overdrive assembly up.

18 Rotate the top of the assembly towards the back of the plotter and pull the assembly to the right, out from the left side-plate.

Be careful not to lose the bushing on the left side of the overdrive roller.

Removing the Drive Roller Assembly

1 Remove the electronics-enclosure cover ➧ page 6-5.

2 Remove the window ➧ page 6-13.

3 Remove the center cover ➧ page 6-14.

4 Remove the left endcover ➧ page 6-16.

5 Lift the left front trim clear of the plotter.

6 Remove the right endcover ➧ page 6-17.

7 Remove the front-panel assembly ➧ page 6-18.

8 Remove the carriage motor ➧ page 6-24.

9 Remove the media motor ➧ page 6-25.

10 Remove the encoder strip ➧ page 6-27.

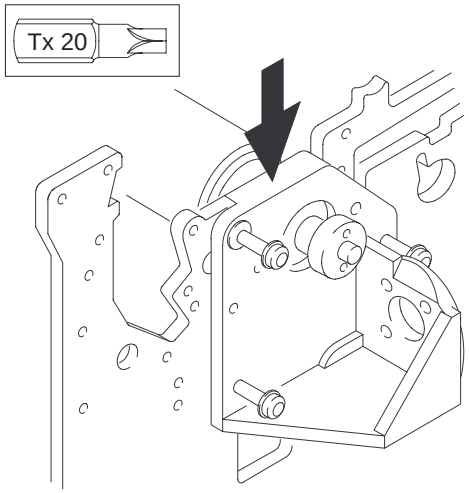
11 Remove the bail assembly ➧ page 6-45.

12 Remove the service station ➧ page 6-42.

13 Remove the overdrive assembly ➧ page 6-48.

14 Remove the three screws that attach the media-motor mount to the right sideplate.

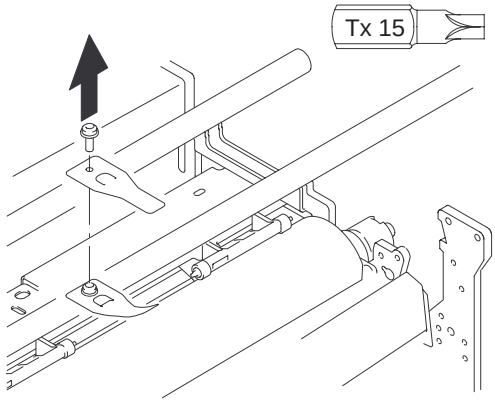
Reinstalling: *Press down on the media mount as you replace the three screws. This is to ensure correct spacing between the drive roller and the cartridge nozzles.*



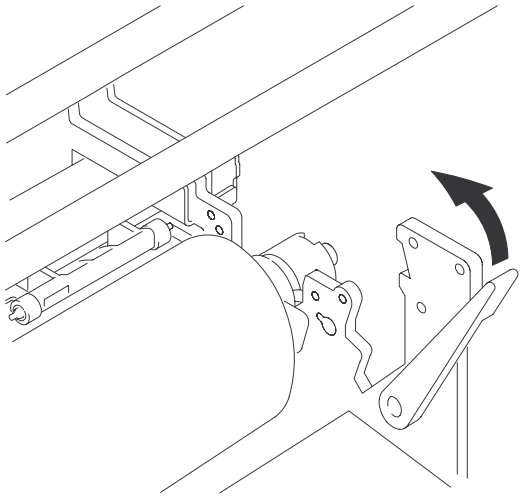
15 Unclip the cables from the holding clip underneath the media-motor mount.

16 Lift the mount clear of the plotter.

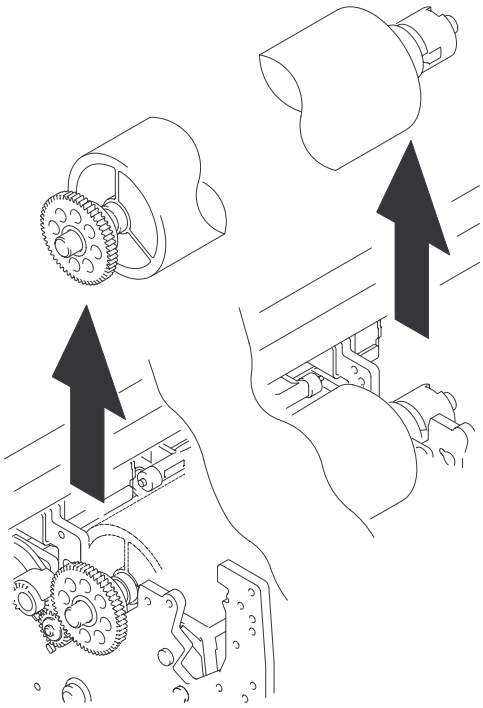
17 Remove the screw that attaches the media director to the chassis assembly. Remove the media director.



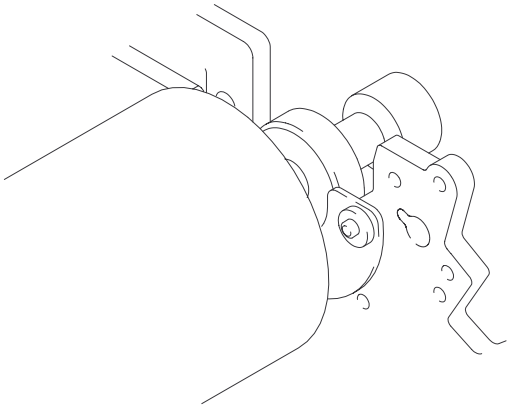
18 Pull the pinch-arm lever forward to raise the pinch-arm assembly.



19 Remove the drive roller from the plotter.



Reassembling: *Ensure that the bearing assembly at the right end of the drive roller is seated in the right sideplate and completely on the right side of the axial bias plate.*



Calibration: *After reassembling the plotter, perform:*

- *Accuracy calibration* ⏵ page 7-6.
- *Drop-detect calibration* ⏵ *page 7-4.*

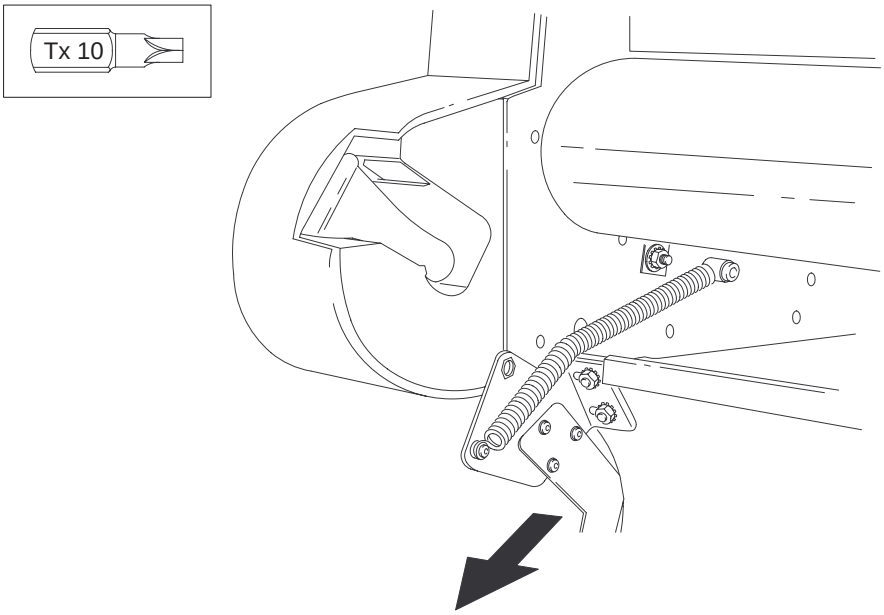
Removing the Rollfeed Cover Assembly

1 Lower the rollfeed cover and hold it about halfway open.

2 Remove the screws and washers that attach the left and right springs to the pivot spring anchor pins.

3 Loosen the two nuts that attach each end of the rollfeed cover to the pivots.

4 Pull the rollfeed cover clear of the plotter.



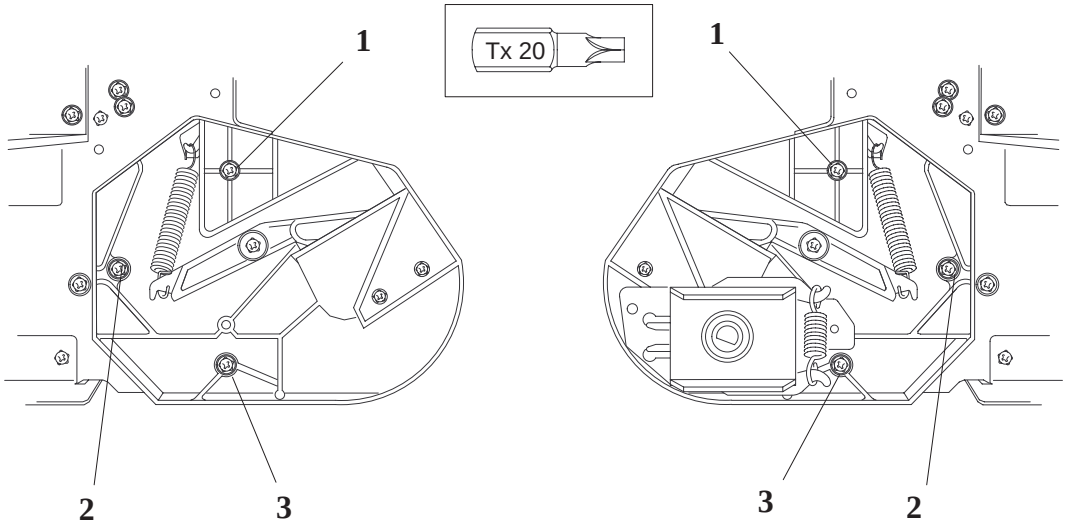
Removing the Rollfeed Module Assemblies (Left and Right)

1 Remove the left endcover ➧ page 6-16.

2 Remove the right endcover ➧ page 6-17.

3 Remove the rollfeed cover assembly ➧ page 6-51.

4 Remove the three screws that attach the rollfeed module assembly to each sideplate.



Removing the Entry Platen

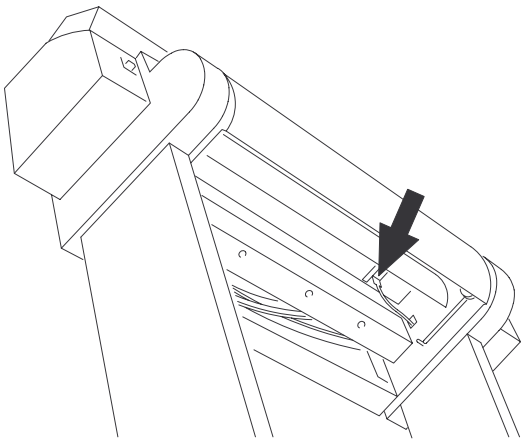
1 Remove the window ➧ page 6-13.

2 Remove the center cover ➧ page 6-14.

3 Remove the left endcover ➧ page 6-16.

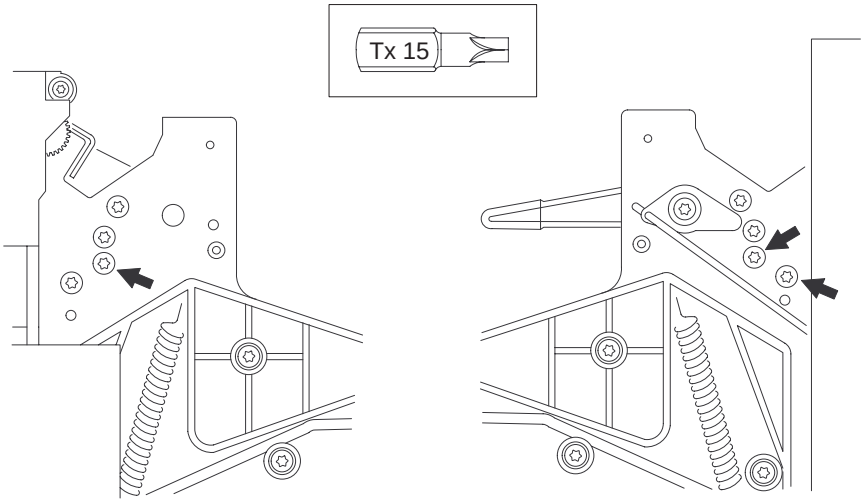
4 Remove the right endcover ➧ page 6-17.

5 Release the media sensor cable from all the clamps. Remove the media sensor from the entry platen.

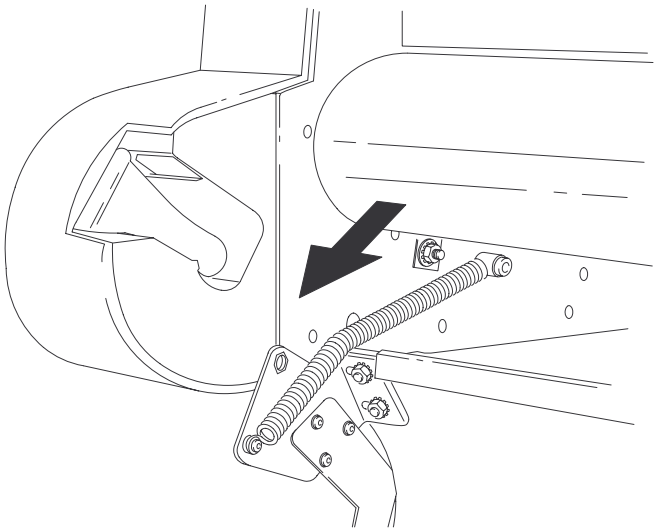


6 Lower the rollfeed cover to the open position.

7 Loosen the wedge screws that attach the entry platen to the left and right sideplates.



8 Pull the entry platen down, forward and clear of the plotter.



Removing the Cutter-Enclosure Assembly

1 Remove the left endcover ➧ page 6-16.

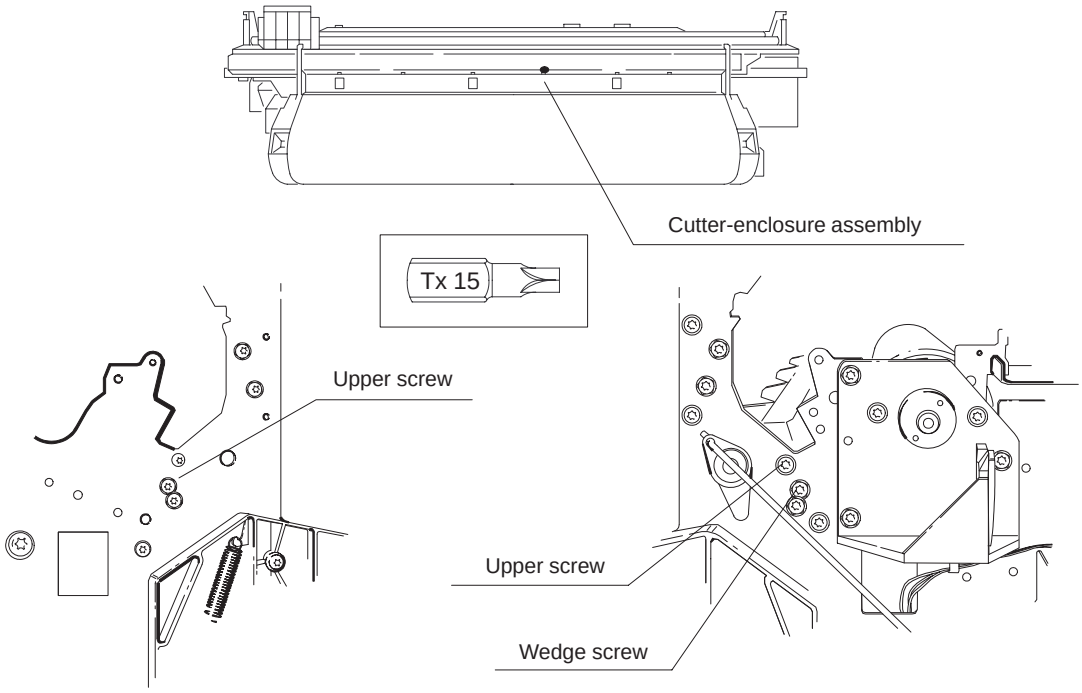
2 Remove the right endcover ➧ page 6-17.

3 Remove the overdrive assembly ➧ page 6-48.

4 Remove the upper screw from the left side plate.

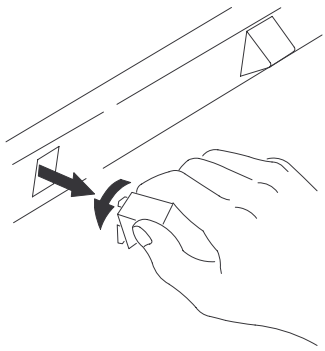
5 Remove the wedge screw and the upper screw from the right side-plate.

6 Pull the cutter-enclosure assembly forward and clear of the plotter.



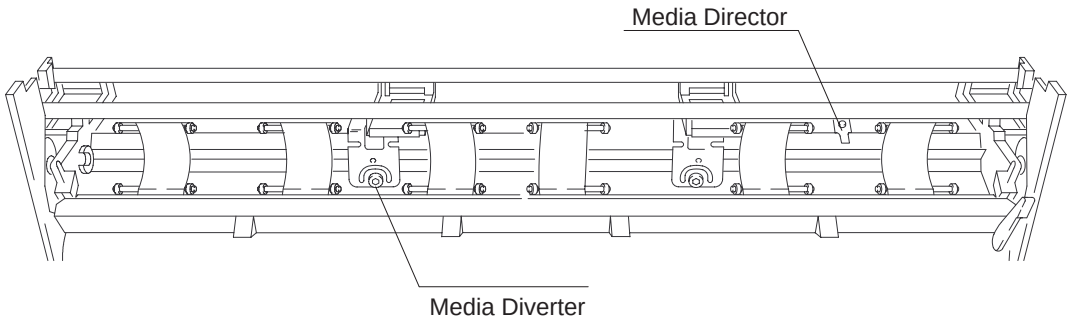
7 To remove the media guides from the cutter enclosure, grasp each one firmly, twist it counter-clockwise, and pull it clear of the enclosure.

***Reassembling**: The rear edge of the cutter enclosure assembly slides in between the two rear pins on the left and right sideplates during replacement.*



Removing the Media Diverter

1. Remove the window ⧫ page 6-13.
2. Remove the left endcover ⧫ page 6-16.
3. Remove the right endcover ⧫ page 6-17.
4. Remove the encoder strip ⧫ page 6-27.
5. Remove the bail assembly ⧫ page 6-45.
6. Remove the overdrive assembly ⧫ page 6-48.
7. Remove the drive-roller assembly ⧫ page 6-49.
8. Carefully bend each media diverter and pull it free from the chassis assembly.



Removing the Pinch-Arm Assemblies

1 Remove the drive roller assembly ➧ page 6-49.

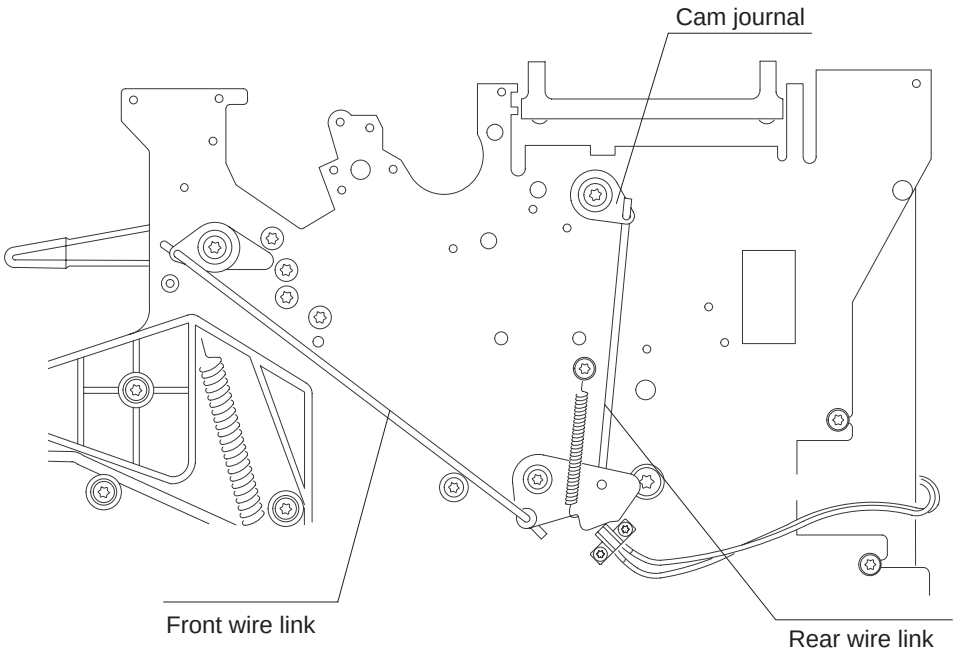
2 Push the pinch-arm lever (located on the right side of the entry platen) into the down position.

3 On the right side of the plotter, disconnect the rocker-plate tension spring to relieve any remaining tension on the pinch-arm lift mechanism.

4 On the right side of the plotter, loosen the cam-journal screw by turning it 12 times counter-clockwise and push the screw in towards the center of the plotter.

5 Repeat step **4** and try to pull the cam journal and rear wire link to the right and clear of the bar cam.

If unsuccessful, turn the cam-journal screw two more times counter-clockwise, push the screw in towards the center of the plotter and try again to pull the cam journal and rear wire link to the right and clear of the bar cam. Repeat these actions until successful.



Reassembling: *Before reinstalling the cam journal, tighten the nut and screw just to the point where the nut is inside the journal. Reinstall the journal and slightly tighten the screw.*

CAUTION

Reassembling: *Do not overtighten the cam-journal screw. Doing so could break the journal, cause the bar cam to enter the sideplate hole and thus restrict the action of the pinch-arm lever.*

6 Hold the cam journal on the left side of the plotter with your left hand.

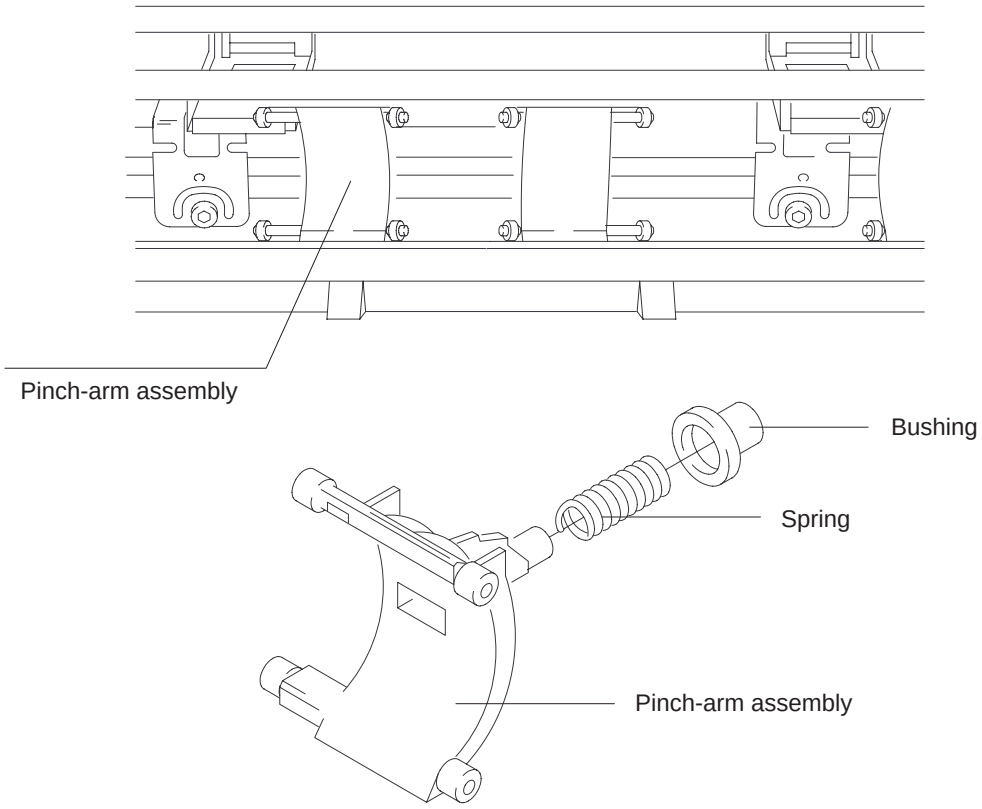
7 Reach around to the front of the plotter and push the top of the bar cam slightly towards the rear of the plotter, simultaneously pulling the cam journal to the left, so that the bar cam can begin to slide out of the left sideplate.

Reassembling: *Position the bar cam* ***between*** *the left and right sideplates, or the lift mechanism will not work.*

8 While pressing the right-most pinch-arm assembly towards the rear of the plotter against its spring tension, slide the bar cam left until it clears that pinch-arm assembly.

9 Remove the pinch-arm assembly and spring from the chassis.

Take care that the spring does not fall.



10 Repeat the steps **8** and **9** until all of the pinch-arm assemblies have been removed or until you have removed the pinch-arm assembly that is to be replaced.

7

Calibrations

Adjustments

There are no electrical or mechanical adjustments required on DesignJet 700, 750C, 750C Plus plotters and DesignJet 755CM printers.

Calibrations

The plotters/printers have several calibration procedures that must be performed under certain conditions. Refer to the table below to determine when calibrations are required.

When Required	Calibration		
	Drop Detect	**Line Sensor**	**Accuracy**
Carriage is replaced or disassembled	**Yes**	**Yes**	**Yes**
Cartridge checking constantly rejects pens	**Yes**	No	No
Drive roller assembly is replaced	**Yes**	No	**Yes**
Edge-detect failures occur	No	**Yes**	No
EEROM is cleared (Calibrations to be done in this order)	**Yes**	**Yes**	**Yes**
Length of lines drawn by the plotter is not as specified by the software	No	**Yes**	No
Main PCA is replaced without restoring the EEROM values	**Yes**	**Yes**	**Yes**
Mark Encoder is replaced	No	No	**Yes**
Media is not detected by the line sensor	No	**Yes**	No
Plots have consistent banding due to paper advance error	No	No	**Yes**
Service Config Plot X-mark distance is not 500mm (± 1mm.); mono on inkjet film	No	No	**Yes**
Service station is replaced or disassembled	**Yes**	No	**Yes**
X-axis motor/encoder is replaced	No	No	**Yes**

Menu Path

All calibration procedures are accessible through the front-panel menu structure. The **accuracy calibration** is available through the Utilities main menu. The **service configuration plot** function, also located in the "*Utilities*" menu, is used in conjunction with the accuracy calibration procedures for comparison purposes. Procedures reserved for service use are available through the "*Service Tests*" menu, which is a subset of the "*Utilities*" menu.

Entering the Service Tests Menu System

1 Switch the plotter **O**N.

Certain plotter failures that can occur will prevent the plotter from reaching the "STATUS / Ready for Media" state. If one of these problems occurs, switch the plotter OFF. Press and hold down the ENTER and the UP ARROW buttons while switching the plotter ON. This will allow access to the service tests.

2 Press the **Enter** button.

3 Use the **Arrow** buttons to scroll to the "Utilities" menu display. Either the Short or Full menu mode will access the "Service Tests" submenu.

4 Press the **Enter** button.

5 Simultaneously press the **Enter** and the **Up Arrow** buttons to access the "Service Tests" submenu.

6 Use the **Arrow** buttons to scroll through the test selections.

7 Press the **Enter** button to begin a specific test when the required test is displayed.

If no button is pressed for 1.5 minutes, the front panel will return to the "Status" menu.

In some cases a quick press of a button may not be recognized by the processor. When pressing a button, be sure to press it deliberately and all the way to the bottom of its travel.

*If the plotter hangs up during a test, switch the plotter OFF and restart at step **1** again.*

In some cases the plotter may revert to the "STATUS" message upon exiting a test. To return to the service menu, perform the above steps.

1C. Drop Detect Calibration

In this procedure the position of the drop detect sensor relative to the four print cartridges is calibrated. Four values are calculated and stored in the EEROM.

Perform the drop detect calibration whenever the:

- EEROM is cleared.
- Main PCA is replaced without restoring the EEROM values.
- Cartridge checking algorithm continues to reject pens.
- Service station is replaced or disassembled.
- Drive roller assembly is replaced.
- Carriage is replaced.

You will also need to perform the drop detect calibration whenever these system errors appear on the front-panel display (details on error codes ➧ page 8-9):

- 070000H
- 070005, 6, 7 or 8
- 070010
- 070020
- 070030

The drop detect calibration is accessible through the "Service Tests" submenu. Perform the drop detect calibration as follows:

1 In the Service Tests submenu, scroll to "1C Drop Detect Cal" and press **Enter**.

2 The display shows the message "Calibrating" indicating that the calibration is in progress.

3 If the calibration passes, the "Success Calibration / Press Enter" message is displayed on the front-panel. Press **Enter** to return to the Service Tests submenu.

4 If the calibration fails, an Error Code is displayed on the front-panel.

If the calibration fails the test:

1 Perform the drop detector test ➧ page 8-37.

2 Replace the cartridges.

3 Perform the Y-static friction test ➧ page 8-46.

2C. Line Sensor Calibration

The line sensor calibration is used to calibrate the intensity of the line sensor in the carriage PCA. A flag is cleared and set in the EEROM after the calibration and is used until it is recalculated. An incorrect calibration can result in edge-detection failures during media loading. The cartridge alignment procedure is also performed as part of this calibration.

Perform the line sensor calibration whenever the:

- Calibration in the EEROM is cleared.
- Edge detect procedure failures occur during media loading.
- Carriage is replaced.
- Main PCA is replaced without restoring the EEROM values.
- Length of lines drawn by the plotter is not as specified by the software.
- Media is not detected by the line sensor.

The line-sensor calibration is accessible through the "Service Tests" submenu. Perform the line-sensor calibration as follows:

Make sure that bond or coated media is loaded before performing the line sensor calibration.

1 In the Service Tests submenu, scroll to "2C Line sensor cal" and press **Enter**.

2 The display shows the message "Calibrating Green LED Light" indicating that the calibration is in progress.

3 When the calibration is completed, the display shows the message *"Green LED Light # / Press enter"*.

The # sign will be a number which corresponds to the intensity of the LED light which will vary for different types of media. The normal range of this number should be between 0 and 56.

4 If the calibration fails, an Error Code is displayed on the front-panel.

If the calibration fails the test:

1 Replace the carriage ➧ page 6-34.

3C. Accuracy Calibration

By performing the accuracy calibration procedures the plotter can be restored to its factory settings accuracy, or it can be calibrated to allow for the current environment. Accuracy calibrations are stored in the plotter EEROM. When performing the accuracy calibration from the *"Service Test"* submenu, the factory correction values are recalculated. The calibration performed from the *"Utilities"* menu calculates a new user calibration test. This value overrides the factory value until the plotter is reset from the *"Resets"* menu. Once the plotter is reset, it uses the default values until another user calibration is done.

Perform the accuracy calibration whenever the:

- EEROM is cleared.
- Main PCA is replaced without restoring the EEROM values.
- Drive roller assembly is replaced.
- X-axis motor-encoder is replaced.
- Service Station is replaced or disassembled.
- Carriage is replaced or disassembled.
- Mark Encoder is replaced.

Before performing the accuracy calibration, print a service configuration plot (details ➧ page 8-56) on D or E-size media. The accuracy calibration is needed if the distance between the centers of the "X" marks on the service configuration plot is not 500 mm (20 in.) ± 1 mm (0.04 in.) under normal environmental conditions. Media expansion can affect endpoint accuracy. The plotter endpoint accuracy is specified on inkjet polyester film only at 0.2% of the specified vector length.

Recalibration is also required when there is a banding problem due to a paper advance error

If the measured accuracy, media thickness, or environmental conditions vary greatly from the factory standards, recalibrate the plotter using the following procedure:

Remove any media already loaded into the plotter before performing the calibration.

Place a sheet of polyester film over the top of the plotter for approximately 10 minutes to let it stabilize to the environmental conditions. Use a sheet approximately 24 x 36 inches (61 x 91 cms). Roll media may also be used. When using polyester film, load it with the matte(dull) side down.

1 In the Service Tests submenu, scroll to "3C Accuracy cal" and press **Enter**.

2 The "Create pattern / Measure pattern" message is displayed.

3 Press the **Up Arrow** button to select "*Create pattern*".

4 The "*Status* / *Calibrating*" message is displayed while the plotter is calibrating.

5 When the plotter has finished calibrating, the "*Load media for calibration*" message is displayed.

6 Load the media. If using D-size media, load the short edge as the leading edge in D-size plotters and the long edge as the leading edge in E-size plotters.

7 When the media is loaded, the plotter will automatically begin to plot the pattern.

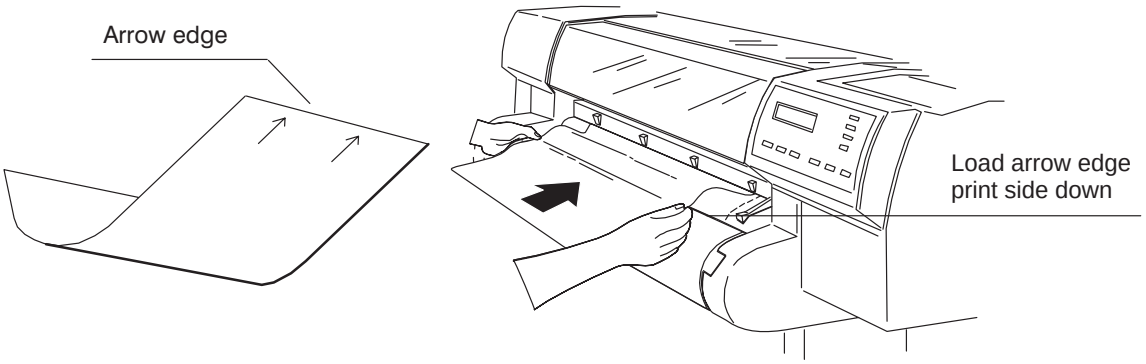
8 A "*Status* / *Printing*" message is displayed while plotting.

9 Remove the media when the plotter has finished plotting.

10 The "*Create pattern* / *Measure pattern*" message is displayed.

11 Press the **Down Arrow** button to select "*Measure pattern*".

12 Rotate the plot so that the edge with the arrows points to the leading edge, then reload the plot with the arrow edge print side down.



13 The plotter will load the plot and then measure the alignment marks using the line sensor on the pen carriage.

14 If the calibration passes, the "Success Calibration / Press Enter" message is displayed on the front-panel. Press **Enter** to return to the Service Tests submenu.

15 If the calibration fails, the "Calibration Error / Continue"message is displayed on the front-panel.

If the calibration fails the test:

1 Replace the cartridges.

2 Perform the line sensor calibration ➧ page 7-5.

3 Perform the mark position test ➧ page 8-44.

Notes

8

Troubleshooting

Diagnostics - Self Test

Introduction

This chapter deals with the various options available to the engineer in solving technical problems with the plotter:

- Service tests performed automatically via the Service Menu.
- Diagnostic self-tests reporting errors via worded messages and number codes.
- Troubleshooting routines designed to guide the engineer to the source of the problem and suggesting solutions.

Initialization Sequences

Whenever the the plotter is switched on, it automatically performs a series of internal self tests and mechanical initialization sequences.

Switch ON - Normal Behavior

When the plotter is switched on:

1 All front-panel LEDs flash.

2 The display shows one dot and the fan turns on.

3 The display shows two dots and the message “Status/Initializing” is displayed on the front-panel.

4 The wiper stepper motor is initialized.

5 The cartridge carriage knocks against the left side of the plotter.

6 The cartridge carriage moves across the plotter and knocks three times against the right side of the plotter.

7 The carriage returns to the left side of the plotter and the primer sensor is initialized.

8 The plotter checks if the cartridges require calibration and, if so, performs it (Brilliant Pulse Warming and/or pen energy calibration). If the black cartridge is not detected the display shows “Cartridge Missing”.

If any of the color cartridges is not detected, the plotter is set to monochrome mode (only applicable to DesignJets 750C, 750C Plus and 755CM).

9 If sheet media is loaded, it is pulled into the plotter.

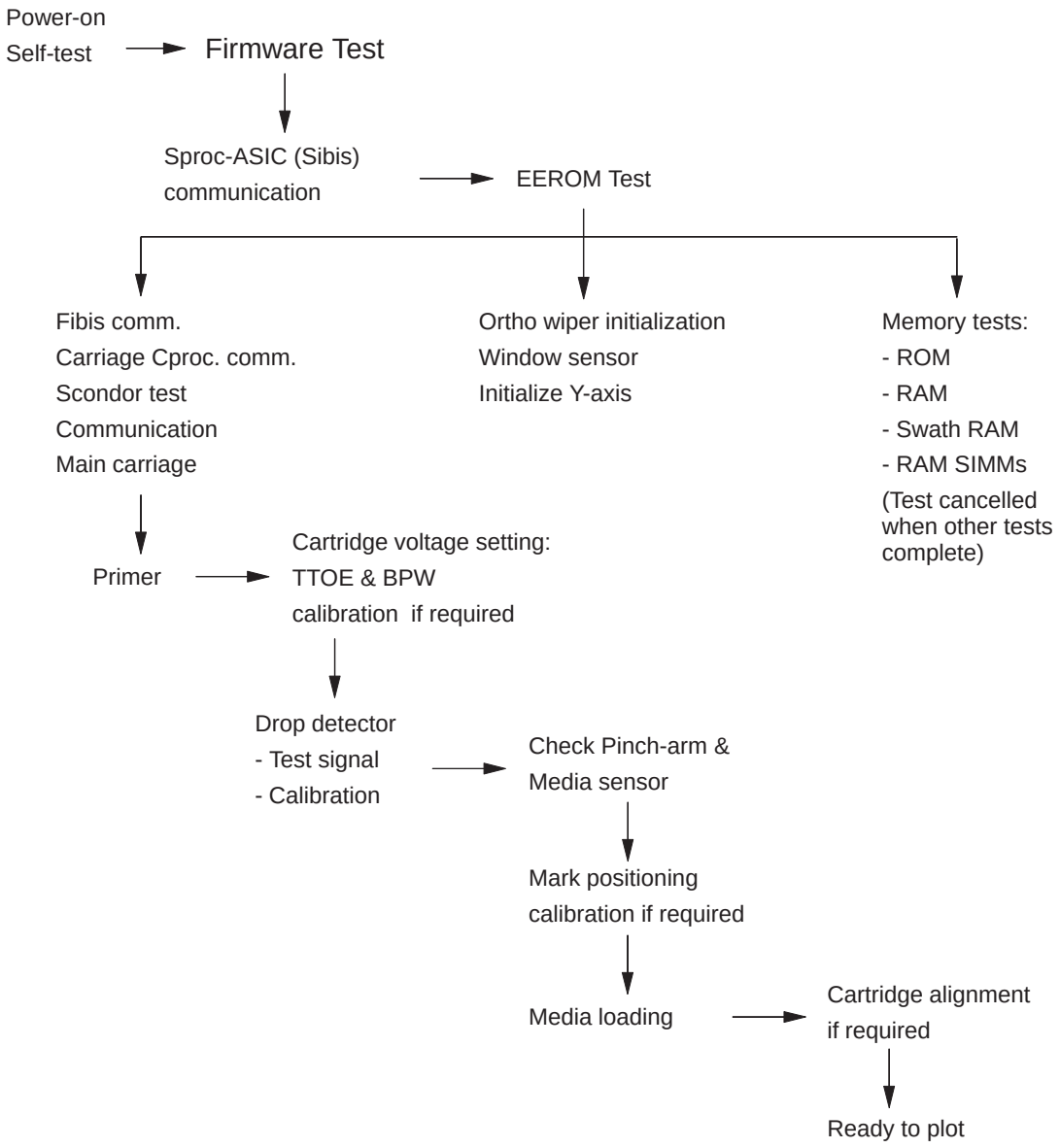
10 The mark encoder is located by the line sensor.

11 If roll media is loaded, the margins are checked. If no media is present, the display shows “Status/Ready for Media”.

12 If required, the plotter performs the cartridge alignment.

13 The message “Status/Ready” is displayed on the front-panel.

Power-ON Self-Test & Mechanical Initialization



Service Tests and Error Messages

To aid fault diagnosis, error messages in words and hexa-decimal error codes are displayed, and there is a full set of Service Tests available on the extensive Service Menu.

This is then followed by Error message/code listings grouped by area of fault to assist in diagnosis. Within the table facing the Error Messages/Codes, corrective actions are listed.

Service tests and troubleshooting tips relevant to the faulty area are included.

Two types of error messages can be viewed on the front-panel display:

- Worded error messages.
- System error codes.

Worded Error Messages

Worded error messages indicate that a user error or an internal error has occurred. Some error messages require action to clear, and others are only displayed until the next operation is performed by the plotter. See the table on page 8-5 for an alphabetical listing.

Error Codes

The front-panel displays a six-digit hexa-decimal error code, the meanings of which are given in this Chapter. See the table on page 8-9 for a numerical listing of possible error codes.

The following table gives a quick explanation of the error codes:

Error code	Type of Problem
01xxxx	Hardware Failure
02xxxx	Software/Memory Failure
03xxxx	Hardware Problem
04xxxx and 05xxxx	MIO System Failure
06xxxx	Pen Alignment System Error
07xxxx	Drop Detect System Error

Service Tests

The plotter has many internal service tests that can be used in troubleshooting. Instructions for entering the service tests menu are given on page 8-20.

Front Panel Messages

Worded Error Messages

Worded error messages indicate that a user error or an internal error has occurred. Some error messages require action to clear, and others are only displayed until the next operation is performed by the plotter. See the following table:

Message	Error/Action
Alignment error Continue	• The plotter experienced an internal alignment failure. The window was lifted, or the front panel was used to perform some other action while pen alignment was proceeding. Press the **Down Arrow** button to continue. • Rerun pen alignment ➧ page 8-40.
Calibrate error Continue	• An error was detected during calibration and, as a result, the calibration plot could not be measured. Press the **Down Arrow** button to continue, then reload the calibration plot. Follow front panel instructions.
Edge not found Reload media	• Plotter could not find the edge of the media during the loading procedure using the optical sensor on the carriage. Note which carriage side failed (left or right). Check the leading edge of the media for unevenness; cut a straight edge if necessary and reload. Be sure to position the right edge along the perforated line on the entry platen when loading. • Remove any ink deposits on the drive roller ➧ page 4-3. Ink deposits are reflective and can give false indications for detecting media edges. • Check the line sensor.
Load error Remove media	• The cutting carriage is not pushed all the way to the right. • Check the drop detect sensor and cable connectors. • Media was inserted with the lever up. Lower the lever and reinsert the media.
Lower lever to continue	• The lever on the right side of the plotter was lifted while the plotter was busy.
Media too small	• Media loaded for accuracy calibration or pen alignment is too small. Reload appropriate media of the correct size.

Message	Error/Action
Mispositioned Reload roll	• Roll is mispositioned. Unload roll media. Open the roll cover and push the media roll all the way to the right so that it is flush against the media stop on the roll core. Reload media with the right edge no more than 0.2 inches (0.5 cm) from the perforated line on the entry platen. • Remove any ink deposits on the drive roller ⧫ page 4-3. Ink deposits are reflective and can give false indications for detecting media edges.
Mispositioned Reload sheet	• Sheet is mispositioned. Remove the sheet and reload it with the right edge no more than 0.2 inches (0.5 cm) from the perforated line on the entry platen.
MIO data error	• The modular interface is configured incorrectly. Press the **Enter** button to clear the message from the front-panel display. • Recheck the MIO configuration settings.
MIO error Comm. break	• The flow of data from the application software to the plotter was prematurely stopped (for example, by switching the computer OFF before all of the data was sent). Press the **Enter** button to clear the message from the front-panel display.
MIO error Handshake	• The modular interface is configured incorrectly. Press the **Enter** button to clear the message from the front panel display. Check the handshake settings on the front panel, in the hardware configuration, and in the application software configuration. Adjust the settings in the application software configuration as required to ensure compatibility. *You cannot change the handshake setting in the plotters front panel.*
Out of memory Data was lost	• The current plot is too large for the plotter's buffer. Additional memory must be installed to plot drawing.
Remove media Lower lever	• An attempt to load media was made while the media load lever at the right of the plotter was raised. Remove the media, lower the lever, and reload media with the lever down.

Message	Error/Action
Roll misaligned Reload roll	• Roll media is misaligned. Unload roll media. Open the roll cover and push the media roll all the way to the right so that it is flush against the media stop on the roll core. Reload, making sure that the left/right media edges are flush with the left/right edges of the roll
RS-232 error Baud, parity	• The RS-232-C interface is configured incorrectly. Press the **Enter** button to clear the message from the front panel display. Check the baud rate and parity settings on the front panel and in the software application configuration. Adjust the setting as required to ensure compatibility. • This error can also indicate a framing error caused by the wrong number of start/stop bits sent or the wrong data word length. The plotter expects 1 start bit, 7 data bits, 1 parity bit, and 1 stop bit.
RS-232 error Handshake	• The RS-232-C interface is configured incorrectly. Press the **Enter** button to clear the message from the front panel display. Check the handshake settings in the application software configuration. Adjust the settings in the software application configuration as required to ensure compatibility. *You cannot change the handshake setting in the plotters front panel.*
Service pens Continue	• Pen checking is ON and an error has been detected. Press the **Up Arrow** button if you want to service the cartridges (replace or reseat). Press the **Down Arrow** button if you want to continue without servicing the pens. • Pen checking is OFF and one of the cartridges is overheated. Replace the cartridge.
Servo Processor Initialized	• The ROM SIMM firmware is not recognized. Replace the ROM SIMM (details ➧ page 6-7) and/or replace the main PCA (details ➧ page 6-9).

Message	Error/Action
Sheet misaligned Reload sheet	• Sheet media is skewed. Remove it and reload it so that the right edge being loaded into the plotter is aligned with the perforated line on the entry platen. Make sure that the leading edge is straight.
Switch power off Check cartridge path	• A servo shutdown has occurred in the Y-axis. The cartridge carriage cannot move. The plotter may be jammed with media. Switch the plotter OFF. Check the pen path, and clear if necessary. • If required, troubleshoot the Y-axis mechanics and circuitry.
Switch power off Check media path	• A servo shutdown has occurred in the X-axis. The drive roller cannot move, or the roll feed spindle cannot freely rotate. The plotter may be jammed with media. Switch the plotter OFF. Check the media path, and clear it if necessary. • If required, troubleshoot the X-axis mechanics and circuitry.
System error XXXXXX	• An internal error has occurred and a multi-character alpha-numeric code is displayed. Users should turn the plotter OFF and then ON again to try to clear the error message. • The meaning of the error codes is explained on page 8-9.
Wrong Cartridge Type	• You have loaded one or more incompatible cartridges. Replace the cartridges with those appropriate for this plotter. If the message continues, then perform the carriage test (details ➧ page 8-27) and the main-carriage comunications test (details ➧ page 8-26).

System Error Codes

System error codes are hexa-decimal based numbers generally caused by internal system errors. The following table contains a list of system error codes and their respective descriptions and recommended corrective actions.

If you have an error code which is not documented in this Service Manual or you have an error which you cannot resolve, then report the error to the HP Response Center or the nearest HP Support Office. When reporting the error, have the following information ready:

- Which firmware revision the plotter is using.
- The complete error number.
- The Service configuration plot ➧ page 8-56.
- The Current configuration sheet ➧ page 3-13.
- Which software application the customer is using (name, version, etc.).
- Is the problem reproducible by you?
- Additional comments about the usage, the setting, etc..

Important Information on Troubleshooting Error Codes

Before spending time troubleshooting the problem by doing the various tests or replacing parts (which may not need replacing), check which firmware revision the plotter is using or check if a service note deals with this particular problem (refer to chapter 10 for all service notes). Some problems which occurred in earlier firmware releases have been solved in later revisions. Refer to the service note documenting the firmware history for HP DesignJets 750C and 755CM (model A) ➧ page 10-5. Only replace the firmware when the problem that you are trying to resolve is fixed in a later firmware revision.

Example:

System Error:	070100 000D0231
Software:	AutoCAD 12
Firmware Revision:	A.02.04
Problem/Suggestion:	Front-panel problem. Fixed in firmware revsion A.02.10.

Error Code	Problem Description	Corrective Actions

010001	Window sensor circuitry not operating correctly.	• Check the window sensor switch.
		• Check that the sensor cable is connected to the front-panel PCA.
		• Disconnect the sensor cable connector from the front-panel PCA, and read the resistance between the pins. Values should read as follows:
		
		Pins / Window Up / Window Down
		1-2 / ∞ Ω / ∞ Ω
		1-3 / 0Ω / ∞ Ω
		2-3 / ∞ Ω / 0Ω
		
		• Replace defective wires or assemblies.
		• Replace the:
		  • Front-panel to main-PCA cable.
		  • Front-panel PCA
		  • Main PCA ➧ page 6-9.
		Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

010020	ROM test failure.	• Replace the:
		  • ROM SIMM ➧ page 6-7.
		  • Main PCA ➧ page 6-9.

010021	DRAM test failure.	• Replace the main PCA ➧ page 6-9.
010022	Swath RAM test failure.	• Replace the main PCA ➧ page 6-9.
010023	EEROM test failure.	• Clear the EEROM ➧ page 8-21. • Replace the main PCA ➧ page 6-9.
010024	Pen interface ASIC test failure.	• Replace the main PCA ➧ page 6-9.

Error Code	Problem Description	Corrective Actions

010030	Failed communications between the carriage and main processors.	• For all 01003X codes, check the trailing cable connections and continuity.
		• If required, replace the:
		  • Main PCA ➧ page 6-9.
		  • Carriage assembly ➧ page 6-34.
		  • Trailing cable ➧ page 6-36.
		Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

010032	Carriage ASIC test failure.	• Refer to error code 010030.
010033	Pen interface ASIC and carriage ASIC link test failure.	• Refer to error code 010030.

010034	Error writing to carriage ASIC.	• Replace the:
		  • Trailing cable ➧ page 6-36.
		  • Main PCA ➧ page 6-9.
		• Refer to error code 010030.

010040	Error detected in X-axis servo feedback loop.	• Reroute the power cables away from the Y-axis motor.
		• Check the:
		  • X-axis encoder.
		  • Encoder cable.
		  • Main PCA.

010041	Error detected in Y-axis servo feedback loop.	• Check the:
		  • Encoder strip.
		  • Carriage assembly.
		  • Trailing cable.
		  • Main PCA.

Error Code	Problem Description	Corrective Actions
010050	Defective Postscript SIMM.	• Check/replace the Postscript SIMM.

010060	Primer motor/sensor initialize failure.	• If the primer stepper motor operates, then check the primer sensor connection and/or operation. If it does not operate, replace the:
		  • Primer ➧ page 6-41.
		  • Cable assembly ➧ page 6-47.
		  • Main PCA ➧ page 6-9.
		Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.
		• Make sure that the primer sensor is correctly positioned.

010080	RS-232-C data overflow.	• Data byte was not read before another was entered into the UART. Check the handshake settings in the software application configuration. • Replace the main PCA ➧ page 6-9. • If the problem remains, report the problem to the HP Response Center or the nearest HP Support Office.
020001 **020002**	Memory fragmentation error.	• Turn Queing to OFF in the front-panel. • Add more memory. • If the problem remains, report the problem to the HP Response Center or the nearest HP Support Office. Note conditions before the error occurred. Include system configuration in the report.

Error Code	Problem Description	Corrective Actions
02002x	Firmware error related in most cases to the PostScript process. (x = values 0-9 hex)	• Possible defective PostScript SIMM. Also check that the PostScript SIMM is installed in the second slot from the top on the Main PCA.
030010	Excess friction in pen capping assembly	• Check the sled movement in the service station, simulating the entering operation of parking the carriage. • Replace the service station ➧ page 6-42.
04xxxx	MIO interface error.	• If an MIO is installed, check the MIO setup. If necessary, replace the MIO. • Check/replace the main PCA ➧ page 6-9.
040601	The MIO card does not support the MIO 6 protocol. Cards with version 5 or below can not be used with this plotter. Version 5.1 cards behave as expected but do not support PML instructions.	• Install the latest version of the MIO card.
05xxxx	MIO system error.	• Check/replace the main PCA ➧ page 6-9.
06030A	Mark position not found.	• Perform the mark position test ➧ page 8-44.
06030B	Bad ambient temperature read.	• Replace the cartridges. • Replace the carriage PCA.
060308 **060309**	Problem with Pen Voltage Control.	• Replace the cartridges. • Replace the carriage PCA.

Error Code	Problem Description	Corrective Actions
070000 H (where H is a hex digit indicating which cartridge(s) failed)	Unable to calibrate drop detect location.	• In binary format, each bit corresponds to one cartridge. **750C 750C *Plus* 755 CM** **Hex value** / **Binary value** / **Pen Color** 1 / 0001 / Black 2 / 0010 / Cyan 4 / 0100 / Magenta 8 / 1000 / Yellow Cartridge combinations give other hex values, for example, if cyan and magenta failed, the value would be hexa-decimal 6 − adding 0010 and 0100 gives 6.

070005	Calibrated **offset value** for the **black** pen was too large. The location of the **black** pen was found during drop detection calibration but was not in the correct location relative to the drop detect sensor.
	
	Excessive noise on the +5V supply may be causing the sensitive drop detection circuitry to sense drops that are not there.
		• Replace the cartridge.
		• Perform the nozzle print test ➧ page 8-32.
		• Perform the drop detector/open sensor test ➧ page 8-37.
		• If required, replace the service station ➧ page 6-42.
		• To verify the functionality of the Y-axis drive system, perform the:
		  • Y-axis friction test ➧ page 8-45.
		  • Y-static friction test ➧ page 8-46.
		  • Y-axis encoder test ➧ page 8-47.

070006	As 070005 for cyan pen.	• See Error Code 070005.
070007	As 070005 for magenta pen.	• See Error Code 070005.
070008	As 070005 for yellow pen.	• See Error Code 070005.

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Error Code	Problem Description	Corrective Actions

070010	False drops detected during power on.	• Check for noise on the line voltage.
		• Perform the drop detect calibration ➧ page 7-4.
		• Causes also include:
		  • A noisy power supply
		  • A bad drop detect sensor
		  • An acoustically noisy environment
		  • The main PCA.

070020	One of the Drop Detection errors has occurred - or, during the Drop Detection no drop was detected. Pen checking is set to OFF.	• Perform the drop detect calibration ➧ page 7-4. • Troubleshoot the cartridges and the drop detector. • If required, replace the service station ➧ page 6-42. • Check the cable assembly and the main PCA.

070030	The drop detect status signal indicates a bad drop detector.	• Perform the drop detector/open sensor test ➧ page 8-37.
		• Perform the drop detect calibration ➧ page 7-4.
		• Replace the:
		  • Service station ➧ page 6-42.
		  • Cable assembly ➧ page 6-47.
		  • Main PCA ➧ page 6-9.
		Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

Error Code	Problem Description	Corrective Actions
070100	Firmware error	• Report the error to the HP Response Center or the nearest HP Support Office, stating the following information: • the complete error number. • service configuration plot. • plot file where the error has occurred. • additional comments about the usage, the setting, etc..
0000D8 XXXXXXXX	Firmware error	• Report the error to the HP Response Center or the nearest HP Support Office, stating the following information: • Is the plotter using the latest firmware revision? • The complete error number. • The Service configuration plot ➧ page 8-56. • The Current configuration sheet ➧ page 3-13. • Which software application the customer is using (name, version, etc.). • Is the problem reproducible by you? • Additional comments about the usage, the setting, etc..
080001	Post Script error	• Report the error to the HP Response Center or the nearest HP Support Office, stating the following information: • the complete error number. • service configuration plot. • plot file where the error has occurred. • additional comments about the usage, the setting, etc..

Service Tests

The following is a list of all internal service tests available in the plotters. Instructions for entering the service tests menu are given on page 8-20.

1 EEROM ➧ page 8-21

The purpose of this test is to clear or test the EEROM.

2 EEROM Clear Counters ➧ page 8-22

The purpose of this test is to reset the counters of the EEROM after periodic preventive maintenance has been performed.

3 EEROM Model Type ➧ page 8-23

The purpose of this test is to set the correct plotter model (not applicable to the DesignJet 700). This test also allows you to view (get) which plotter model is currently set.

4 MIO ➧ page 8-24

The purpose of this test is to check if the MIO card is present and verify its functionality.

5 Main PCA ➧ page 8-25

The purpose of this test is to do an extended functionality check of the internal circuits of the main PCA which are not involved with any other board.

6 Main-Carriage Com ➧ page 8-26

The purpose of this test is to check all circuits involved in communicating between the main PCA and the carriage.

7 Carriage ➧ page 8-27

The purpose of this test is to check the internal circuits of the carriage PCA.

8 Thermal Control ➧ page 8-28

The purpose of this test is to verify the functionality of the sense resistors and any associated electronics.

9 TTOE ➧ page 8-29

The purpose of this test is to calibrate the Thermal Turn-On Energy for each cartridge.

10 Pen Continuity ➧ page 8-30

The purpose of this test is to check for proper interconnection between the cartridge(s) and the carriage.

11 Pen ID ➧ page 8-31

The purpose of this test is to check the pen ID and the resistance values.

12 Nozzle Print Test ➧ page 8-32

The purpose of this test is to check if the cartridge nozzles function correctly.

13 Mono PQ Plot ➧ page 8-33

The purpose of this test is to check the print quality in monochrome at 600 dpi.

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14 Color PQ Plot ➧ page 8-34

The purpose of this test is to check the line attributes in color.

15 Area fill PQ Plot ➧ page 8-35

The purpose of this test is to check the performance between the ink and the media using area fills and to validate the media settings.

16 Pen Nozzle Detect ➧ page 8-36

The purpose of this test is to check the functionality of all the nozzles of the cartridges.

17 Drop Detector ➧ page 8-37

The purpose of this test is to:

- Check the test signal.
- Check if the drop detector is sensing ghost drops due to noise interference.
- Verify that the drop detector senses correctly.

18 Edge Detect ➧ page 8-39

The purpose of this test is to verify the operation of the line sensor.

19 Pen Alignment ➧ page 8-40

The purpose of this test is to perform the pen alignment.

20 Ortho Wiper ➧ page 8-41

The purpose of this test is to check that the ortho wiper functions correctly.

21 Primer Test ➧ page 8-42

The purpose of this test is to:

- Check if the primer sensor can initialize the primer motor.
- Verify the ability of the primer to select individual cartridges and to prime them.

22 X Motion Control ➧ page 8-43

The purpose of this test is to determine the power required to move the drive roller.

23 Mark Position ➧ page 8-44

The purpose of this test is to verify that the mark encoder is detected.

24 Y-Axis Friction ➧ page 8-45

The purpose of this test is to check if the dynamic friction on the Y-axis is in the correct range.

25 Y-Static Friction ➧ page 8-46

The purpose of this test is to check the static friction of the carriage assembly at different postions along the Y-axis.

26 Y-Axis Encoder ➧ page 8-47

The purpose of this test is to check the Y-axis encoder and its servo loop.

27 Cutter ➧ page 8-48

The purpose of this test is to verify the operation of the cutter.

28 Bail Stepper ➧ page 8-49

The purpose of this test is to verify the operation of the bail stepper motor.

29 Media Sensor ➧ page 8-50

The purpose of this test is to verify the operation of the media sensor with or without media.

30 Window Sensor ➧ page 8-51

The purpose of this test is to verify the operation of the window sensor.

31 Pinchwheel Sensor ➧ page 8-52

The purpose of this test is to verify the operation of the pinchwheel sensor.

32 Button Test ➧ page 8-53

The purpose of this test is to verify the operation of the front-panel buttons.

Entering the Service Tests Menu System

1 Switch the plotter **ON**.

Certain plotter failures that can occur will prevent the plotter from reaching the "STATUS / Ready for Media" state. If one of these problems occurs, switch the plotter OFF. Press and hold down the ENTER and the UP ARROW buttons while switching the plotter ON. This will allow access to the service tests.

2 Press the **Enter** button.

3 Use the **Arrow** buttons to scroll to the "Utilities" menu display. Either the Short or Full menu mode will access the "Service Tests" submenu.

4 Press the **Enter** button.

5 Simultaneously press the **Enter** and the **Up Arrow** buttons to access the "Service Tests" submenu.

6 Use the **Arrow** buttons to scroll through the test selections.

7 Press the **Enter** button to begin a specific test when the required test is displayed.

If no button is pressed for 1.5 minutes, the front panel will return to the "Status" menu.

In some cases a quick press of a button may not be recognized by the processor. When pressing a button, be sure to press it deliberately and all the way to the bottom of its travel.

If the plotter hangs up during a test, switch the plotter OFF and restart from step 1.

In some cases the plotter may revert to the "STATUS" message upon exiting a test. To return to the service menu, perform the above steps.

1. EEROM

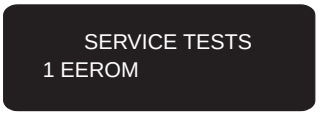
The purpose of this test is to clear or test the EEROM. It will test the:

- EEROM.
- Main PCA.

The test clears the defaults of all calibration values and calculates a new EEROM checksum. The EEROM should only be cleared in the event of a checksum failure.

Perform the EEROM test as follows:

1 In the Service Tests submenu, scroll to "1 EEROM" and press **Enter**.



2 The "Clear EEROM / Test EEROM" message is displayed on the front-panel.

3 Press the **Down Arrow** to test the EEROM.

4 The "Testing / Don't Power Off" message is displayed on the front-panel.

5 If the test passes, the "Pass Test / Press Enter" message is displayed on the front-panel. Press **Enter** to return to the Service Tests submenu.

6 If the test fails, the "Fail Test / Press Enter" message is displayed on the front-panel and you must clear the EEROM as follows:

7 Press **Enter** to return to the Service Tests submenu and then select the EEROM test.

8 Press the **Up Arrow** to clear the EEROM.

The EEROM should only be cleared in the event of a checksum failure. Otherwise the EEROM should never be cleared.

After clearing the EEROM, switch the plotter OFF and ON again without any media loaded and perform the following calibrations in the order listed:

1 *Drop detect calibration* ➧ *page 7-4.*

2 *Line sensor calibration* ➧ *page 7-5.*

3 *Accuracy calibration* ➧ *page 7-6.*

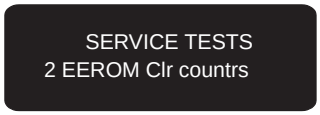
It is recommended that a configuration plot is printed from the "Utilities" menu for setup reference. You will also need to reconfigure the front-panel settings.

2. EEROM Clear Counters

The purpose of this test is to reset the counters of the EEROM after periodic preventive maintenance has been performed.

Clear the EEROM counters as follows:

1 In the Service Tests submenu, scroll to “2 EEROM Clr countrs” and press **Enter**.



2 The “Reset carr. count / Reset plots count” message is displayed on the front-panel.

3 Press the **Up Arrow** to reset the carriage counter or press the **Down Arrow** to reset the plots counter.

4 If the counters have been reset correctly, the following messages will be displayed on the front-panel:

- “Carriage cycles counter reset” if the carriage counter is reset.
- “Plots counter reset” if the plots counter is reset.

5 Press **Enter** if another counter needs to be reset or press **Previous** if you want to return to the Service Tests submenu.

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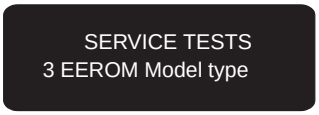
3. EEROM Model Type

The purpose of this test is to set the correct plotter model (not applicable to the DesignJet 700). This test also allows you to view (get) which plotter model is currently set.

Set or view the plotter model as follows:

1 In the Service Tests submenu, scroll to "3 EEROM Model type" and press **Enter**.



2 The "Get Model type / Set Model type" message is displayed on the front-panel.

3 Press the **Up Arrow** to view which plotter model is currently set or press the **Down Arrow** to set the correct plotter model.

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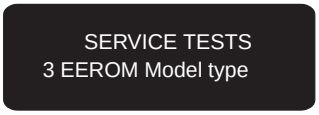
3. EEROM Model Type

The purpose of this test is to view which plotter model is currently set.

View the plotter model as follows:

1 In the Service Tests submenu, scroll to "EEROM Model type" and press **Enter**.



2 The "DesignJet 700" message is displayed on the front-panel.

4. MIO

The purpose of this test is to check if the MIO card is present and verify its functionality.

Perform the MIO test as follows:

1 In the Service Tests submenu, scroll to “4 MIO” and press **Enter**.

2 The “Re-initializing MIO” message is displayed on the front-panel while the plotter checks the MIO card.

3 If the MIO card is not present, the“MIO Initialization Failed / Press Enter” message is displayed on the front-panel.

4 If the MIO card is present, the“MIO Card Present / Press Enter” message is displayed on the front-panel.

5 If the MIO card is present but does not pass the test, the“MIO Failed Test / Press Enter” message is displayed on the front-panel.

If the MIO card fails the test:

1 Perform the main PCA test ➧ *page 8-25.*

2 Reseat the MIO card and perform the MIO test again.

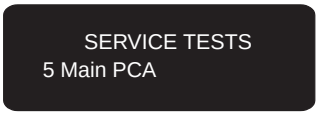
3 Replace the MIO card and perform the MIO test again.

5. Main PCA

The purpose of this test is to do an extended functionality check of the internal circuits of the main PCA which are not involved with any other board.

Perform the main PCA test as follows:

1 In the Service Tests submenu, scroll to “5 Main PCA” and press **Enter**.



2 The following messages, in the order listed, are displayed on the front-panel as each component of the main PCA is tested.

1 “Testing ROM”

2 “Testing PS SIMM” (only if the Postscript SIMM is installed)

3 “Testing DRAM”

4 “Testing SWATH RAM”

5 “Testing RAM SIMM”

6 “Testing SIBIS SHUFFLER”

7 “Testing EEROM”

3 If the test passes, the “Pass Test / Press Enter” message is displayed on the front-panel.

4 If the test fails, an Error Code is displayed on the front-panel.

If the Main PCA fails the test:

1 *Save the EEROM values (to be used in the new Main PCA)* ➧ *page 8-54.*

2 *Replace the main PCA* ➧ *page 6-9.*

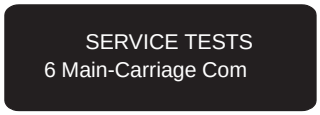
3 *Save the EEROM values in the new Main PCA* ➧ *page 8-54.*

6. Main-Carriage Com

The purpose of this test is to check all circuits involved in communicating between the main PCA and the carriage.

Perform the main-carriage communication test as follows:

1 In the Service Tests submenu, scroll to “6 Main-Carriage Com” and press **Enter**.



2 The following messages, in the order listed, are displayed on the front-panel as each circuit is tested.

1 “Testing CPROC COMM”

2 “Testing ASIC COMM”

3 “Testing Pen Voltages”

3 If the test passes, the “Pass Test / Press Enter” message is displayed on the front-panel.

4 If the test fails, an Error Code is displayed on the front-panel.

If the test fails, try replacing one of the following components:

1 Main PCA ➧ page 6-9.

2 Carriage assembly ➧ page 6-34.

3 Trailing cable ➧ page 6-36.

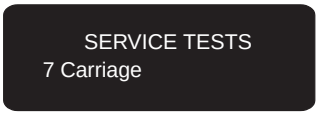
Only replace one component at a time and perform the “Main-Carriage Com” test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

7. Carriage

The purpose of this test is to check the internal circuits of the carriage PCA.

Perform the carriage test as follows:

1 In the Service Tests submenu, scroll to “7 Carriage” and press **Enter**.



2 The following messages, in the order listed, are displayed on the front-panel as each circuit is tested.

1 “Testing CPROC COMM”

2 “Testing SCONDOR”

3 “Testing ATOD Converters”

3 If the test passes, the “Pass Test / Press Enter” message is displayed on the front-panel.

4 If the test fails, an Error Code is displayed on the front-panel.

If the carriage fails the test, try replacing one of the following components:

1 Carriage assembly ➧ page 6-34.

2 Main PCA ➧ page 6-9.

3 Trailing cable ➧ page 6-36.

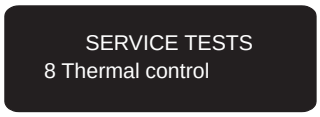
Only replace one component at a time and perform the “Carriage” test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

8. Thermal Control

The purpose of this test is to verify the functionality of the sense resistors and any associated electronics. The test first reads the thermal sense voltage and then performs the brilliant pulse warming calibration.

Perform the thermal control test as follows:

1 In the Service Tests submenu, scroll to "8 Thermal Control" and press **Enter**.



700

2 The plotter will automatically test the black cartridge.

750C
750C *Plus*
755 CM

The "Select a Position" message is displayed on the front-panel. Use the **Arrow** buttons to select the cartridge that needs to be tested.

3 Press the **Enter** button.

4 The "Testing xxxx Pen" message is displayed on the front-panel while the plotter tests the cartridge.

xxxx represents the color of the cartridge that is being tested.

5 When the plotter has finished testing the cartridge, the "Thermal Voltage #.## / Press Enter" message is displayed on the front-panel.

*If the value (#.##) of the thermal voltage is between 0.5 - 2.25 V then press **Enter**.*

*If the value of the thermal voltage is **not** between 0.5 - 2.25 V then the cartridge has failed the test. To resolve the problem, try one of the following:*

1 *Clean the interconnect pad in the carriage or the cartridge that failed the test.*

2 *Replace the cartridge that failed the test.*

3 *Perform the pen continuity test ⧫ page 8-30.*

4 *Replace the carriage ⧫ page 6-34.*

6 The "Calibrating BPW..." message is displayed on the front-panel while the plotter is calibrating the brilliant pulse warming of the cartridge.

7 When the plotter has finished calibrating, the "BPW Threshold #.## / Press Enter" message is displayed on the front-panel.

*If the value (#.##) of the BPW threshold is between 100 - 450 then press **Enter**.*

*If the value (#.##) of the BPW threshold is **not** between 100 - 450 then, to resolve the problem, try one of the troubleshooting tips given in step **5**.*

9. TTOE

The purpose of this test is to calibrate the Thermal Turn-On Energy for each cartridge.

Perform the TTOE test as follows:

1 In the Service Tests submenu, scroll to "9 TTOE" and press **Enter**.

2 The "Setting Voltages..." message is displayed on the front-panel.

700

3 The plotter will automatically calibrate the black cartridge.

750C
750C *Plus*
755 CM

The "Select a Position" message is displayed on the front-panel. Use the **Arrow** buttons to select the cartridge that needs to be tested.

4 Press the **Enter** button.

5 The "Calibrating xxxx Pen" message is displayed on the front-panel while the plotter calibrates the cartridge.

xxxx represents the color of the cartridge that is being calibrated.

6 When the plotter has finished calibrating the cartridge, the "TTOE Voltage #.## / Press Enter" message is displayed on the front-panel.

If the message "TTOE fail" is displayed on the front-panel, then the cartridge has failed the test. To resolve the problem, try one of the following:

1. *Clean the interconnect pad in the carriage or the cartridge that failed the test.*
2. *Replace the cartridge that failed the test.*
3. *Perform the pen continuity test ➧ page 8-30.*
4. *Replace the carriage ➧ page 6-34.*

7 The "Pen Voltage #.## / Press Enter" message is displayed on the front-panel.

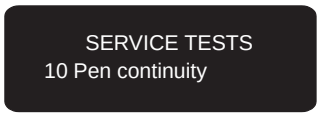
The pen voltage value (#.##) is for reference purposes only.

10. Pen Continuity

The purpose of this test is to check for proper interconnection between the cartridge(s) and the carriage. For each cartridge, the plotter checks the connection between one address and all the primitives (PS =) and vice-versa (addr sel =).

Perform the pen continuity test as follows:

1 In the Service Tests submenu, scroll to "10 Pen continuity" and press **Enter**.



2 The "Setting Voltages..." message is displayed on the front-panel and the carriage moves to the right side of the plotter.

3 The "Black Pen PS = # / addr sel = #" message is displayed on the front-panel.

*If the value (#) of the **Black Pen PS** and **addr sel** is 0 then the cartridge has passed the test.*

*If the value (#) of the **Black Pen PS** and **addr sel** is **not** 0 then the cartridge has failed the test. To resolve the problem, try one of the following:*

1 *Clean the interconnect pad in the carriage or the cartridge that failed the test.*

2 *Replace the cartridge that failed the test.*

3 *Perform the nozzle print test* ➧ *page 8-32.*

4 *Replace the carriage* ➧ *page 6-34.*

750C
750C *Plus*
755
CM

4 Use the **Arrow** buttons to select the next cartridge that needs to be tested.

*As each cartridge is tested, the Pen PS and addr sel value is displayed on the front-panel. If the values given are not 0, then, to resolve the problem, try one of the troubleshooting tips given in step **3**.*

5 Press the **Enter** button when the test has been completed.

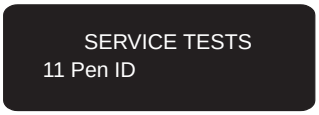
6 The "Setting Voltages..." message is displayed on the front-panel and the carriage returns to the service station.

11. Pen ID

The purpose of this test is to check the pen ID and the resistance values.

Perform the pen ID test as follows:

1 In the Service Tests submenu, scroll to "11 Pen ID" and press **Enter**.



2 The "Black Pen R = ##.## / id = c8001" message is displayed on the front-panel.

*If the value (##.##) of the **Black Pen R** is between 26.0 and 31.5 then press **Enter**.*

*If the value of the **Black Pen R** is **not** between 26.0 and 31.5 then the cartridge has failed the test. To resolve the problem, try one of the following:*

1. *Check the part number of the cartridge. Is it the correct one for this plotter?*
2. *Clean the interconnect pad in the carriage or the cartridge that failed the test.*
3. *Replace the cartridge that failed the test.*
4. *Perform the pen continuity test ➧ page 8-30.*
5. *Replace the carriage ➧ page 6-34.*

750C
750C *Plus*
755
CM

3 Use the **Arrow** buttons to select the next cartridge that needs to be tested.

*As each color cartridge is tested, the **Pen R** and **id** value is displayed on the front-panel. If the **Pen R** values given are not between 23.3 and 32.8, then, to resolve the problem, try one of the troubleshooting tips given in step **2**.*

4 Press the **Enter** button when the test has been completed.

12. Nozzle Print Test

The purpose of this test is to check if the cartridge nozzles function correctly.

Perform the nozzle print test as follows:

Load media before performing this test.

1 In the Service Tests submenu, scroll to “12 Nozzle Print Test” and press **Enter**.

2 The “Printing PRESS ENTER when pen finished” message is displayed on the front-panel while the plotter produces the nozzle print.

3 Press the **Enter** button when the test has been completed.

4 Check the nozzle print. If there is an interconnection problem you will notice some primitives or addresses without any nozzles printed. If any nozzles are out, weak or misdirected then the cartridge(s) will need servicing.

If any of the above problems are visible on the nozzle print, try one of the following:

When you have an interconnection problem:

1. *Clean the interconnect pad in the carriage or the cartridge(s) that failed the test.*
2. *Replace the cartridge(s) that failed the test.*
3. *Replace the carriage* ➧ *page 6-34.*

If the cartridge(s) need servicing:

1. *Replace the cartridge(s) that failed the test and try the nozzle print test again.*
2. *If the problem occurs again, replace the service station* ➧ *page 6-42.*

13. Mono PQ Plot

The purpose of this test is to check the print quality in monochrome at 600 dpi.

Perform the mono PQ plot test as follows:

Load media before performing this test.

1 In the Service Tests submenu, scroll to “13 Mono PQ Plot” and press **Enter**.

2 The “Unidirectional / Bidirectional” message is displayed on the front-panel.

3 Press the **Up Arrow** to produce the mono PQ plot in a unidirectional mode or press the **Down Arrow** to produce the mono PQ plot in a bidirectional mode.

4 The “Printing PRESS ENTER when finished” message is displayed on the front-panel while the plotter produces the mono PQ plot.

5 Press the **Enter** button when the test has been completed.

6 For more information on troubleshooting the mono PQ plot ➧ page 9-13.

750C
750C *Plus*
755
CM

14. Color PQ Plot (Only Applicable to DesignJets 750C, 750C Plus and 755CM)

The purpose of this test is to check the line attributes in color.

Perform the color PQ plot test as follows:

Load media before performing this test.

1 In the Service Tests submenu, scroll to "14 Color PQ Plot" and press **Enter**.

2 The "Printing PRESS ENTER when finished" message is displayed on the front-panel while the plotter produces the color PQ plot.

3 Press the **Enter** button when the test has been completed.

4 For more information on troubleshooting the color PQ plot ➧ page 9-15.

15. Area fill PQ Plot

The purpose of this test is to check the performance between the ink and the media using area fills and to validate the media settings.

Perform the area fill PQ plot test as follows:

Load media before performing this test.

1 In the Service Tests submenu, scroll to “15 Area Fill PQ Plot” and press **Enter**.

2 The “Printing PRESS ENTER when finished” message is displayed on the front-panel while the plotter produces the area fill PQ plot.

3 Press the **Enter** button when the test has been completed.

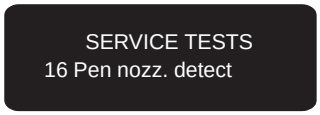
4 For more information on troubleshooting the area fill PQ plot ➧ page 9-17.

16. Pen Nozzle Detect

The purpose of this test is to check the functionality of all the nozzles of the cartridges.

Perform the pen nozzle detect test as follows:

1 In the Service Tests submenu, scroll to “16 Pen nozz. detect” and press **Enter**.



700

2 The plotter will automatically test the black cartridge.

750C
750C *Plus*
755
CM

The “Select a pen to test” message is displayed on the front-panel. Use the **Arrow** buttons to select the cartridge that needs to be tested.

3 Press the **Enter** button.

4 The “Testing xxxx pen” message is displayed on the front-panel.

xxxx represents the color of the cartridge that is being tested.

5 If the test passes, the “Pen Test Pass / Press Enter” message is displayed on the front-panel.

6 If the test fails, the “Pen Test Failed / Press Enter” message is displayed on the front-panel.

If a cartridge fails the test, try one of the following:

1 *Reseat the cartridge that failed the test.*

2 *Perform the pen continuity test* ➧ *page 8-30.*

3 *Perform the drop detector test* ➧ *page 8-37.*

4 *Perform the nozzle print test* ➧ *page 8-32.*

5 *Replace the cartridge that failed the test.*

17. Drop Detector

The purpose of this test is to:

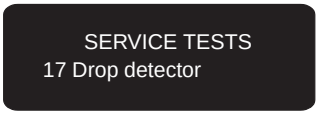
- Check the test signal.
- Check if the drop detector is sensing ghost drops due to noise interference.
- Verify that the drop detector senses correctly.

The drop detector test performs these two tests:

- Blocked sensor test.
- Open sensor test.

Perform the drop detector test as follows:

1 In the Service Tests submenu, scroll to “17 Drop detector ” and press **Enter**.



2 If the “Drop DT Status: Good / Press Enter” message is displayed on the front-panel, then press **Enter** and go to step **4** to continue with the test.

3 If the “Drop DT Status: Bad / Press Enter” message is displayed on the front-panel, then go to step ***16*** to troubleshoot the problem. Press **Enter** if you want to continue with the test.

4 The “Blocked Sensor Test / Open Sensor Test” message is displayed on the front-panel.

5 Press the **Up Arrow** to perform the blocked sensor test.

*If you want to perform the open sensor test, then go to step **10**.*

6 The “Press Enter then Block sensor” message is displayed on the front-panel and carriage moves to the right side of the plotter. Press **Enter**.

7 When the “Block Sensor Now!!” message is displayed on the front-panel, block the drop detect sensor, which is located in the service station.

8 If the test passes, the “Sensor Good / Press Enter” message is displayed on the front-panel.

9 If the test fails, the “Sensor Bad / Press Enter” message is displayed on the front-panel. Go to step ***16*** to troubleshoot the problem.

The test is continued on the next page.

10 If you want to perform the open sensor test, then at step **5** press the **Down Arrow**.

700

11 The “Testing open sensor in black mode” message is displayed on the front-panel.

12 When the test is completed, the “blk false #/2000” message is displayed on the front-panel.

750C 750C *Plus* **755 CM**

13 The “Testing open sensor in black mode” message is displayed on the front-panel.

14 The “Testing open sensor in color mode” message is displayed on the front-panel.

15 When the test is completed, the “blk false #/2000 / clr false #/2000” message is displayed on the front-panel.

*If the **blk** or **clr false** value (#) is less than 5 then press **Enter**.*

*If the **blk** or **clr** false value (#) is more than 5 then the test has failed. Go to step **16** to troubleshoot the problem.*

16 If any of the drop detector tests fail:

1 *Check if the drop detector cable is connected to the main PCA.*

2 *Try replacing one of the following components:*

- Service Station (which includes the drop detector assembly) ➧ page 6-42.
- Cable assembly ➧ page 6-47.
- Power Supply PCA ➧ page 6-11.
- Main PCA ➧ page 6-9.

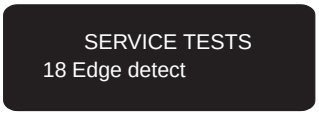
Only replace one component at a time and perform the “Drop Detector” test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

18. Edge Detect

The purpose of this test is to verify the operation of the line sensor.

Perform the edge detect test as follows:

1 In the Service Tests submenu, scroll to “18 Edge Detect” and press **Enter**.



2 The “Y Phys Pos = ##### / Sensor Reads = ###” message is displayed on the front-panel.

3 Use the **Up Arrow** to move the carriage to the left and the **Down Arrow** to move the carriage to the right.

*If the value (###) of **Sensor Reads** is **less** than **100** when passing over the **drive roller** then the line sensor has passed the test.*

*If the value (###) of **Sensor Reads** is more than **110** when passing over the **media** that is loaded then the line sensor has passed the test.*

*If the values (###) of **Sensor Reads** is not within the above required ranges then the line sensor has failed the test. To resolve the problem, try one of the following:*

1. *Clean the drive roller surface.*
2. *Perform the line sensor calibration ➧ page 7-5.*
3. *Perform the main-carriage com test ➧ page 8-26.*
4. *Replace the carriage ➧ page 6-34.*

4 Press the **Enter** button when the test has been completed.

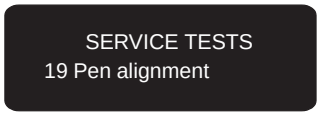
19. Pen Alignment

The purpose of this test is to perform the pen alignment.

Perform the pen alignment test as follows:

Load coated media before performing this test.

1 In the Service Tests submenu, scroll to “19 Pen Alignment” and press **Enter**.



2 The “Aligning Cartridges” message is displayed on the front-panel while the plotter prints the alignment plot and aligns the cartridges.

3 If the “Aligning Finished / Press Enter” message is displayed on the front-panel when the alignment is completed, then check the plot for any cartridge failures.

If the plot shows any signs of cartridge failures then, to resolve the problem, try one of the following:

1 *Perform the line sensor calibration ➧ page 7-5.*

2 *Perform the main-carriage com test ➧ page 8-26.*

3 *Replace the carriage ➧ page 6-34.*

4 If the “Alignment Error / Press Enter” message is displayed on the front-panel when the alignment is completed, but the plot doesn’t show any cartridge failures, then, to resolve the problem, try one of the following:

1 *Replace the cartridge(s).*

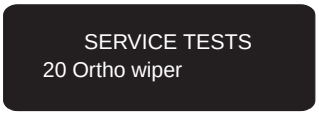
2 *Perform the nozzle print test ➧ page 8-32.*

20. Ortho Wiper

The purpose of this test is to check that the ortho wiper functions correctly.

Perform the ortho wiper test as follows:

1 In the Service Tests submenu, scroll to “20 Ortho Wiper” and press **Enter**.



2 The “Testing Wiper / Press Enter to Stop” message is displayed on the front-panel.

3 The “Cycles done = # / Press Enter to Stop” message is displayed on the front-panel. Press **Enter** to stop the test.

*If the **Enter** button is not pressed during the test, then after **6** cycles, the test will automatically stop.*

4 Check the left side of the plotter to see if the ortho wiper is operating correctly.

If there is no movement from the ortho wiper, then the test has failed. To resolve the problem, try replacing one of the following components:

1. *Service Station* ➧ *page 6-42.*
2. *Cable assembly* ➧ *page 6-47.*
3. *Main PCA* ➧ *page 6-9.*

Only replace one component at a time and perform the “Ortho Wiper” test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

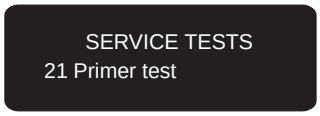
21. Primer Test

The purpose of this test is to:

- Check if the primer sensor can initialize the primer motor.
- Verify the ability of the primer to select individual cartridges and to prime them.

Perform the primer test as follows:

1 In the Service Tests submenu, scroll to “21 Primer Test” and press **Enter**.



2 The “Primer Sensor Test / Begin” message is displayed on the front-panel. Press the **Down Arrow** to start the test.

3 The “Testing Sensor” message is displayed on the front-panel.

700

4 The “Remove Pen to Run Test” message is displayed on the front-panel. Remove the black cartridge to start the test.

750C
750C *Plus*
755
CM

5 The “Remove Pens to Run Test” message is displayed on the front-panel. Remove all the cartridges to start the test.

6 The “Select a Position” message is displayed on the front-panel. Use the **Arrow** buttons to select the cartridge position that needs to be tested.

7 Press the **Enter** button.

8 The “Testing Primer” message is displayed on the front-panel as the plotter begins the test on the primer.

9 If the test passes, the “21 Primer Test” message is displayed on the front-panel.

10 If the test fails, an Error Code is displayed on the front-panel.

If the primer fails the test, try replacing one of the following components:

1. *Primer* ➧ *page 6-41.*
2. *Service Station* ➧ *page 6-42.*
3. *Cable assembly* ➧ *page 6-47.*
4. *Main PCA* ➧ *page 6-9.*

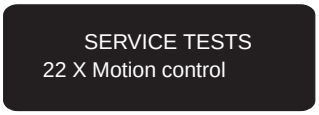
Only replace one component at a time and perform the “Primer” test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

22. X Motion Control

The purpose of this test is to determine the power required to move the drive roller.

Perform the X motion control test as follows:

1 In the Service Tests submenu, scroll to “22 X Motion Control” and press **Enter**.



2 The “Remove Media / Press Enter” message is displayed on the front-panel. Remove the media (if loaded) and press **Enter** to start the test.

3 The “Faster / Slower” message is displayed on the front-panel. Use the **Up Arrow** to increase the speed of the drive roller and the **Down Arrow** to decrease the speed of the drive roller.

4 Press the **Enter** button.

5 The “X Max PWM = # / Press Enter” message is displayed on the front-panel.

*If the maximum value (#) of **X Max PWM** is **less** than **100** then the test has passed.*

*If the maximum value (#) of **X Max PWM** is **more** than **100** then the test has failed.*

If the test fails, try replacing one of the following components:

1 *X-axis motor* ➧ *page 6-25.*

2 *Main PCA* ➧ *page 6-9.*

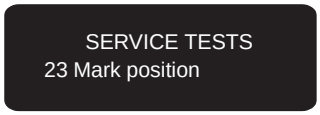
Only replace one component at a time and perform the “X Motion Control” test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

23. Mark Position

The purpose of this test is to verify that the mark encoder is detected.

Perform the mark position test as follows:

1 In the Service Tests submenu, scroll to “23 Mark Position” and press **Enter**.



2 The “Remove Media / Press Enter” message is displayed on the front-panel. Remove the media (if loaded) and press **Enter** to start the test.

3 The “Looking for the Mark” message is displayed on the front-panel while the plotter searches for the mark encoder.

4 If the test passes, the “Mark Found / Press Enter” message is displayed on the front-panel.

5 If the test fails, the “Mark Not Found / Press Enter” message is displayed on the front-panel.

If the mark encoder fails the test, try one of the following:

1 *Clean the mark encoder.*

2 *Perform the line sensor calibration* ➧ *page 7-5.*

3 *Perform the accuracy calibration* ➧ *page 7-6.*

24. Y-Axis Friction

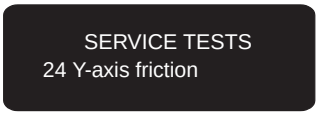
The purpose of this test is to check if the dynamic friction on the Y-axis is in the correct range.

The Y-axis friction test performs these two tests:

- Life test.
- Friction test.

Perform the Y-axis friction test as follows:

1 In the Service Tests submenu, scroll to "24 Y-axis Friction" and press **Enter**.



2 The "Life Test / Friction Test" message is displayed on the front-panel.

3 Press the **Up Arrow** to perform the life test.

*If you want to perform the friction test, then go to step **5**.*

4 The "# moves = # / Stop..." message is displayed on the front-panel. Press the **Down Arrow** button to stop the test.

Check that the carriage moves along the Y-axis without binding.

5 If you want to perform the friction test, then at step **3** press the **Down Arrow**.

6 The "No Cut PWMs #, #, # # / Press Enter" message is displayed on the front-panel. Press **Enter**.

*If the **average** value (###) of **No Cut PWMs** is **less** than **100** then the test has passed.*

*If the **average** value (###) of **No Cut PWMs** is **more** than **100** then the test has failed.*

If the test fails, try one of the following:

1. *Clean the slider rod.*
2. *Replace the Y-axis motor ⏵ page 6-24.*
3. *Perform the Y-axis encoder test ⏵ page 8-47.*
4. *Replace the carriage ⏵ page 6-34.*

7 The "PWM (Cut) = # / Press Enter" message is displayed on the front-panel.

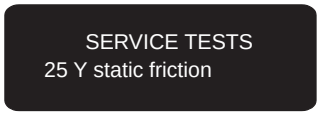
This value (#) is for the cutter PWM and is for reference purposes only.

25. Y-Static Friction

The purpose of this test is to check the static friction of the carriage assembly at different postions along the Y-axis.

Perform the Y-static friction test as follows:

1 In the Service Tests submenu, scroll to “25 Y static friction” and press **Enter**.



2 The “Testing Static Friction...” message is displayed on the front-panel as the plotter performs the test.

3 The “Maximum PWM # / Press Enter” message is displayed on the front-panel.

*A typical Maximum PWM value (#) is **22**.*

If the Maximum PWM value is too high, then you must lubricate the slider rod.

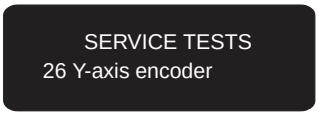
26. Y-Axis Encoder

The purpose of this test is to check the Y-axis encoder and its servo loop.

Perform the Y-axis encoder test as follows:

Load media before performing this test.

1 In the Service Tests submenu, scroll to “26 Y-axis Encoder” and press **Enter**.



2 The “Testing Encoder Strip” message is displayed on the front-panel while the plotter checks the encoder strip

3 If the test passes, the “Encoder Good / Press Enter” message is displayed on the front-panel.

4 If the test fails, the “Encoder Bad / Press Enter” message is displayed on the front-panel.

If the encoder strip fails the test:

1 *Perform the Y-axis friction test* ➧ *page 8-45.*

2 *Replace the encoder strip* ➧ *page 6-27.*

3 *Replace the carriage* ➧ *page 6-34.*

27. Cutter

The purpose of this test is to verify the operation of the cutter.

The cutter test performs these two tests:

- Single cut test.
- Continuous cut test.

Perform the cutter test as follows:

Load media before performing this test.

1 In the Service Tests submenu, scroll to "27 Cutter" and press **Enter**.

2 The "Single Cut / Continuous Cut" message is displayed on the front-panel.

3 Press the **Up Arrow** button to perform the single cut test.

*If you want to perform the continuous cut test, then go to step **5**.*

4 The "Cutter Offset = # / Up, Down, Enter (Cut)?" message is displayed on the front-panel. Use the **Up** and **Down Arrow** buttons to increase or decrease the offset value (#) of the cutter. Press **Enter** when you want to make the single cut.

5 If you want to perform the continuous cut test, then at step **3** press the **Down Arrow** button.

6 The "Press Enter to Exit" message is displayed on the front-panel as the plotter performs the test.

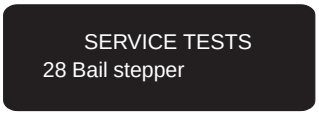
*The plotter continuously uses the cutter to cut the media until you press **Enter**.*

28. Bail Stepper

The purpose of this test is to verify the operation of the bail stepper motor.

Perform the bail stepper test as follows:

1 In the Service Tests submenu, scroll to “28 Bail Stepper” and press **Enter**.



2 The “# / Press Enter to Stop” message is displayed on the front-panel as the bail stepper motor continuously raises and lowers the bail assembly.

*The bail stepper motor continuously raises and lowers the bail assembly until you press **Enter**.*

3 If the bail stepper motor fails to raise the bail assembly twice, then the test has failed.

If the bail stepper motor fails the test, try replacing one of the following components:

1 *Bail stepper motor* ➧ *page 6-46.*

2 *Bail assembly* ➧ *page 6-45.*

3 *Cable assembly* ➧ *page 6-47.*

4 *Main PCA* ➧ *page 6-9.*

Only replace one component at a time and perform the “Bail Stepper” test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

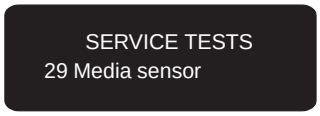
29. Media Sensor

The purpose of this test is to verify the operation of the media sensor with or without media.

Perform the media sensor test as follows:

Remove any loaded media before performing this test.

1 In the Service Tests submenu, scroll to “29 Media Sensor” and press **Enter**.



2 If media is not loaded then the “Media Absent / Stop...” message is displayed on the front-panel. Press the **Down Arrow** button to stop the test.

3 Insert a sheet of A4 media into the entry platen. The “Media Present / Stop...” message is displayed on the front-panel. Press the **Down Arrow** button to stop the test.

*If media **was present** when the “Media Absent / Stop...” message is displayed on the front-panel, then the test has failed.*

*If media **was not present** when the “Media Present / Stop...” message is displayed on the front-panel, then the test has failed.*

If the test fails, try replacing one of the following components:

1. *Media sensor* ➧ *page 6-22.*
2. *Main PCA* ➧ *page 6-9.*

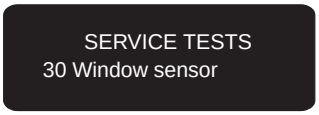
Only replace one component at a time and perform the “Media Sensor” test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

30. Window Sensor

The purpose of this test is to verify the operation of the window sensor.

Perform the window sensor test as follows:

1 In the Service Tests submenu, scroll to “30 Window Sensor” and press **Enter**.



2 If the window is lowered then the “Cover Down / Stop...” message is displayed on the front-panel. Press the **Down Arrow** button to stop the test.

3 If the window is raised then the “Cover Up / Stop...” message is displayed on the front-panel. Press the **Down Arrow** button to stop the test.

*If the window is **raised** when the “Cover Down / Stop...” message is displayed on the front-panel, then the test has failed.*

*If the window is **lowered** when the “Cover Up / Stop...” message is displayed on the front-panel, then the test has failed.*

If the test fails, try replacing the following components:

1. *Window sensor ➧ page 6-20.*
2. *Front-panel assembly ➧ page 6-18.*
3. *Main PCA ➧ page 6-9.*

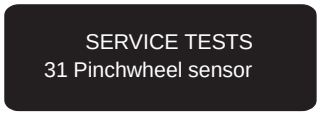
Only replace one component at a time and perform the “Window Sensor” test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

31. Pinchwheel Sensor

The purpose of this test is to verify the operation of the pinchwheel sensor.

Perform the pinchwheel sensor test as follows:

1 In the Service Tests submenu, scroll to “31 Pinchwheel Sensor” and press **Enter**.



2 If the pinchwheel lever is lowered then the “Pinchwheels Down / Stop...” message is displayed on the front-panel. Press the **Down Arrow** button to stop the test.

3 If the pinchwheel lever is raised then the “Pinchwheels Up / Stop...” message is displayed on the front-panel. Press the **Down Arrow** button to stop the test.

*If the pinchwheel lever is **raised** when the “Pinchwheel Down / Stop...” message is displayed on the front-panel, then the test has failed.*

*If the pinchwheel lever is **lowered** when the “Pinchwheel Up / Stop...” message is displayed on the front-panel, then the test has failed.*

If the test fails, try replacing one of the following components:

1. *Pinchwheel sensor* ➧ *page 6-21.*
2. *Pinch-arm assembly* ➧ *page 6-57.*
3. *Main PCA* ➧ *page 6-9.*

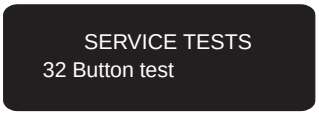
Only replace one component at a time and perform the “Pinchwheel Sensor” test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

32. Button Test

The purpose of this test is to verify the operation of the front-panel buttons.

Perform the button test as follows:

1 In the Service Tests submenu, scroll to "32 Button Test" and press **Enter**.



2 The "Press any key to start test" message is displayed on the front-panel.

3 Press a button on the front-panel. A message stating which button was pressed will be displayed on the front-panel.

***Example**: If the **Cancel** button is pressed, the message "Cancel Pressed / Exit: Up & Down" will be displayed on the front-panel.*

*Press the **Up** and **Down Arrow** buttons simultaneously to stop the test.*

If a button is pressed but is not shown on the front-panel display or is incorrect, then the test has failed.

If the test fails, try replacing one of the following components:

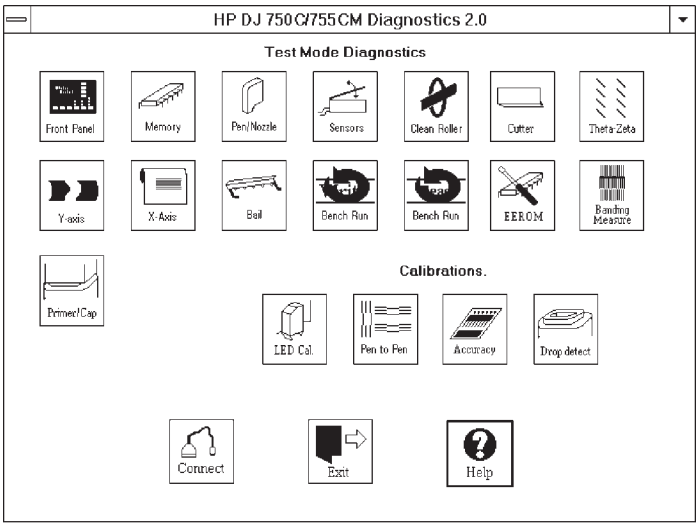
1. *Front-panel assembly ➧ page 6-18.*
2. *Main PCA ➧ page 6-9.*

Only replace one component at a time and perform the "Button" test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

PC-Based Diagnostics

A PC-based diagnostic tool has been developed to help engineers in troubleshooting the various problems that may occur in the plotter. This tool includes many of the Service Tests that are accessible through the front-panel as well as including new tests and troubleshooting functions.

This figure shows all the diagnostics available in this tool.



Using this diagnostic tool, you can save and reload the EEROM data. This is very useful when replacing the main PCA.

The PC-based diagnostics are available by accessing the Plotter Support World Wide Web (WWW) site. This site can be found at the following address:

http://plotter-support.bpo.hp.com/

For more information about what is available on the Plotter Support WWW site ➧ page 10-4.

Troubleshooting Tips

Repair and calibrate.	After you have made a repair, consider whether any **calibrations** have been affected.
Cartridges fail frequently.	**Remove tape and align cartridges:** One frequent cause of cartridge problems is that the user has forgotten to remove the tape from new cartridges. Remove the tape. **Damaged encoder strip:** Another frequent cause of apparent cartridge failure may be a damaged encoder strip. If the small slots on the strip are damaged, the plotter cannot position the carriage correctly during cartridge checking. Try replacing the encoder strip. **Worn wipers:** If the wipers in the service station are worn down, they do not properly wipe the cartridge heads. Easy to replace.
Carriage sensor does not correctly find media edge.	**Ink on roller:** Excessive ink deposits on the drive-roller surface can fool the sensor by reflecting the light. (Cleaning roller ➧ chapter 4.) **Optical sensor incorrectly calibrated:** The accuracy calibration includes calibration of the optical sensor on the carriage. You must use polyester film when performing the accuracy calibration. Otherwise the optical sensor will have problems loading some types of media.
Drive belts wear out prematurely.	**Diazo copiers:** The belt may wear prematurely if the plotter is placed near a diazo copier that uses ammonia to produce blue-line copies. The material used in the belt is very reactive to ammonia vapor. The vapor is very corrosive and can damage other parts as well. Move the plotters away from such copiers. **Storing:** Keep new belts in their bags with dissicant until you need to install them. This is to avoid incorrect swelling.
Noisy carriage movement.	**Dirty carriage bushing:** Remove aluminum or dust particles from the bushing at the back of the carriage, and from the slider path along which the bushing moves.
Ink spilling.	**Spittoon and ink separator:** You need to replace these parts when they fill up with ink. (See ➧ chapter 4.)
Third-party ink and off-axis ink systems.	**Drawer statement:** "HP does not support third-party inks or off-axis ink systems for use with any of its DesignJet series plotters or printers. If a failure or damage to such HP products is found to be directly attributed to the use of third-party inks or off-axis ink systems (or any other non-supported HP supply or accessory), the repair will NOT be covered under HP's warranty or maintenance contract. In such cases, standard time and material charges will be applied to service the plotter or printer."
Troublesome plotters.	**Duty cycle:** Plotters need increased maintenance if users do not limit use to the duty-cycle recommendations. (Details ➧ chapter 4.)

Service Configuration Plot

The configuration plot aids in the analysis of plotter problems by providing:

- A hardclip border around the plot so the margins can be measured.
- Unique patterns for use in detecting cartridge nozzle problems, pen-to-pen alignment problems, ink-flow problems and vertical-line straightness.
- Four X-shaped marks (cross-hairs) for measuring plotter pen-to-pen accuracy (the centers of the cross-hairs should be 500 mm apart).
- Pen/palette set up information.
- The plotter statistics, including code revision and ROM SIMM information.
- The page format and plotter set-up information.
- The RS-232-C/MIO configurations.
- The text blocks of the contents stored in the EEROM.

Draft Mode should not be used when performing the configuration plot as the patterns drawn will be different than described above.

To run the configuration plot, perform the following steps:

1. Switch the power ON.
2. Load D-size or E-size media (either sheet or roll-feed).

   Make sure D-size or E-size media is selected in the front-panel.
3. Ensure that the plotter is in the Full (long) menu mode.
4. Ensure that the plotter is in the “Best” as opposed to the “Fast” mode.
5. From the “Status” menu display, press the **Enter** button.
6. Using the **Arrow** buttons, scroll to the “Utilities” menu.
7. Press the **Enter** button.
8. Using the **Arrow** buttons, scroll to the “Service Config Plot” menu.
9. Press the **Enter** button.
10. The “receiving” LED on the front panel will be lit while the service configuration plot is being produced.

EEROM Text Block

A sample portion of the memory location key is provided in the table below. Use it as a key to the EEROM memory text block on the configuration plot. The first column depicts the block of text shown on the plot but the remaining blocks show the memory location number instead of the contents at each position on the text block. You can find the contents of the memory addresses in the EEROM Map.

		0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
Banked User Area	0:	00	01	02	03	04	05	06	07	08	09	0a	0b	0c	0d	0e	0f
	10:	10	11	12	13	14	15	16	17	18	19	1a	1b	1c	1d	1e	1f
	20:	20	21	22	23	24	25	26	27	28	29	2a	2b	2c	2d	2e	2f
	30:	30	31	32	33	34	35	36	37	38	39	3a	3b	3c	3d	3e	3f
	40:	40	41	42	43	44	45	46	47	48	49	4a	4b	4c	4d	4e	4f
	50:	50	51	52	53	54	55	56	57	58	59	5a	5b	5c	5d	5e	5f
	60:	60	61	62	63	64	65	66	67	68	69	6a	6b	6c	6d	6e	6f
	70:	70	71	72	73	74	75	76	77	78	79	7a	7b	7c	7d	7e	7f
	80:	80	81	82	83	84	85	86	87	88	89	8a	8b	8c	8d		
Service Area		0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
	0:	00	01	02	03	04	05	06	07	08	09	0a	0b	0c	0d	0e	0f
	10:	10	11	12	13	14	15	16	17	18	19	1a	1b	1c	1d	1e	1f
	20:	20	21	22	23	24	25	26	27	28	29	2a	2b	2c	2d	2e	2f
	30:	30	31	32	33												

EEROM Map

(The four hex digits on the right give the memory location, with the two rightmost digits giving the address on the table on page 8-57.)

SERVICE AREA

- EEROM Initialised variables

EEROM_INTERNAL_INIT_A	0x00	
EEROM_INTERNAL_INIT_B	0x01	
EEROM_INTERNAL_VERSION	0x02	

- Mileage monitor variables

EEROM_PAGE_COUNT_LOW	0x03	page count for everybody
EEROM_PAGE_COUNT_MID	0x04	
EEROM_PAGE_COUNT_HI	0x05	

- Bench run variables

BR_CAP_NUM	0x06	Number of Cap_ per cycle
BR_CYCLE_PRIME	0x07	Number of cycles between primings
BR_ERROR_DATA_0	0x08	benchrun error data (byte 0)
BR_ERROR_DATA_1	0x09	benchrun error data (byte 1)
BR_ERROR_DATA_2	0x0A	benchrun error data (byte 2)
BR_NVRAM_WRITES	0x0B	tells benchrun if we should do
BR_STEPPER_CYCLE	0x0C	number of stepper cycles per cycle
BR_DURATION_0	0x0D	number of benchrun cycles (byte 0)
BR_DURATION_1	0x0E	number of benchrun cycles (byte 1)
BR_WAIT_CYCLE	0x0F	benchrun - waits per cycle
BR_BAIL_CYCLE	0x10	bail cycle per print in bench run
BR_PRINT_INTV	0x11	number of swaths per bench run cycle
BR_CUT_NUM	0x12	number of cuts per bench run cycle
BR_Y_PWM_MAX_CUT	0x13	maximum pwd of Y axis (with cut)
BR_Y_PWM_MAX	0x14	maximum pwm of Y axis during bench
BR_X_PWM_MAX	0x16	maximum pwm of X axis during bench
BR_COMPLETE	0x17	Bench run completion flag
BR_CYCLE_COMP_0	0x18	benchrun cycles completed (byte 0)
BR_CYCLE_COMP_1	0x19	benchrun cycles completed (byte 1)

- Preventive maintenance counters

EEROM_PMAINT_CARR_CYLES_LOW	0x1A	Number
EEROM_PMAINT_CARR_CYLES_MED	0x1B	of carriage
EEROM_PMAINT_CARR_CYLES_HIGH	0x1C	cycles
EEROM_PMAINT_PLOTS_DONE_LOW	0x1D	Number of plots|cuts|
EEROM_PMAINT_PLOTS_DONE_HIGH	0x1E	|nests done
EEROM_PMAINT_K_PENS_USED_LOW	0x1F	Number of black pens
EEROM_PMAINT_K_PENS_USED_HIGH	0x20	used
EEROM_PMAINT_CMY_PENS_USED_LOW	0x21	Number of color pens
EEROM_PMAINT_CMY_PENS_USED_HIGH	0x22	used

EEROM_PMAINT_RECVRY_K_1_OR_2_LOW	0x23	Number of at 1st or 2nd attempt success
EEROM_PMAINT_RECVRY_K_1_OR_2_HIGH	0x24	recoveries. (Black)
EEROM_PMAINT_RECVRY_K_3_OR_4_LOW	0x25	Number of at 3rd or 4th attempt success recoveries.
EEROM_PMAINT_RECVRY_K_3_OR_4_HIGH	0x26	(Black)
EEROM_PMAINT_RECVRY_KCMY_FAILURE_LOW	0x27	Number of recoveries for K&CMY pens
EEROM_PMAINT_RECVRY_KCMY_FAILURE_MED	0x28	
EEROM_PMAINT_RECVRY_KCMY_FAILURE_HIGH	0x29	
EEROM_PMAINT_RECVRY_CMY_1_OR_2_LOW	0x2A	Number of at 1st or 2nd attempt success
EEROM_PMAINT_RECVRY_CMY_1_OR_2_HIGH	0x2B	recoveries. (CMYK)
EEROM_PMAINT_RECVRY_CMY_3_OR_4_LOW	0x2C	Number of at 3rd or attempt success rcvr.
EEROM_PMAINT_RECVRY_CMY_3_OR_4_HIGH	0x2D	(CMYK)

- Last byte that can be used in the os zone

EEROM_INTERNAL_SPARE (EEROM_INTERNAL_BLOCK_CHECKSUM-1)	0x32

- CRC checksum word

EEROM_INTERNAL_BLOCK_CHECKSUM (EEROM_INTERNAL_SIZE-2) Checksum	0x33 to 0x34

Notes

9

Print Quality

Print Quality Troubleshooting Checklist

When faced with a print quality problem, use the following checklist as a guide in troubleshooting the problem:

1 Problem reproduction

- Reproduce the problem that the customer is seeing using their original settings.

2 Printer configuration:

- Cartridge check: Set to “ON”.
- Print Mode: Set to “Best” (in the printer and in the drivers).
- Dry time: Set to “Normal”.
- Select the correct media setting when loading the media.

3 Hardware check list

Firmware Revision

- Install firmware revision A.02.10 (C3195-60135) if the firmware revision installed in the plotter is A.02.09 or older.

Mark Encoder (Service Note Details ➧ page 10-18)

- Perform the service test “23 Mark Position” ➧ page 8-44.
- Verify that the mark encoder has a line or a notch. If the mark encoder does not have a line or a notch, then install the “Mark label kit” (C3195-60141). This can be possible for plotters with serial numbers in these ranges:

  C3195A ESA0000000/ESA5B05350
  C3196A ESA0000000/ESA5B20304
  C3198A ESA0000000/ESA5B02306

Paper Advance Kit (Service Note Details ➧ page 10-12)

- Install the “Paper Advance Kit” (C3195-60142) if the serial number is in these ranges:

  C3195A ESA0000000/ESA5B05350
  C3196A ESA0000000/ESA5B20304
  C3198A ESA0000000/ESA5B02306

Fan Deflector (Service Note Details ➧ page 10-22)

- Install the “Fan Deflector” (C3195-40066) if the serial number is in these ranges:

  C3196A ESA0000000/ESA4508541
  C3198A ESA0000000/ESA4508541
  C3195A Not necessary

4 Cartridges

51644M Magenta Problem

- 51644M Magenta Cartridge: Replace the cartridges built from 12/95 through 3/96 (expiry dates from 6/97 to 9/97). These cartridges can cause banding problems (misdirection) and color shift (greenish black).

Cartridge Troubleshooting Process

- If you don't have any samples yet, reproduce the original problem with the correct printer settings.
- Perform the service test "15 Area fill PQ Plot" (details ⧫ page 8-35) with the following configuration:

  PQ: Best
  Media setting: HP High-Gloss Photo, High-Gloss Film media or HP Heavy coated media

  You can identify the cartridges that are failing by checking the area fills. These are the area fills that will be affected by a cartridge problem (nozzle out or misdirected):

Defective Cartridge	Area Fills Affected
Magenta	Magenta, Red (MY), Blue (MC), Black (CMY), Greenish Black (CMY)
Cyan	Cyan, blue (CM), green (CY), black (CMY), Reddish black (CMY)
Yellow	Yellow, red (MY), green (CY), black (CMY), Bluish black (CMY) (Artifacts in the Yellow block are difficult to see)

- To check the nozzle check-out and the Pen to pen alignment, perform the service test "14 Color PQ Plot" (details ⧫ page 8-35) with the following configuration:

  PQ: Fast
  Media setting: Opaque Bond

- Replace the cartridges if a problem is detected.

Cartridge Alignment

- Perform the cartridge alignment (details ⧫ page 8-40) using HP Matte Film or High-Gloss Film. If not available, use Coated media or opaque bond if required.
- If you get an "Alignment Error", ensure that the carriage does not have a pen insertion problem (refer to service note ⧫ page 10-20) and replace it if necessary.

How to Obtain Good Cartridges (Magenta, Cyan or Yellow)?

- In Europe, via the European CSC or ESO Grenoble.
- In US, via the Boise CSC and ESO Roseville.
- Contact Jerry Switzer from IJBU through the SSE of your country to obtain good cartridges if they are not available in your country.

5 Media

- Use HP media. Remember that the media qualified for LFP applications are Coated Heavyweight, High-Gloss White Film or Photo based.
- In case the customer is using "HP High-Gloss Photo", ensure that the lot number is equal to or bigger than C6A620XX. If this is not the case, ask the customer to replace it through the dealer channel (lot numbers of media with problems are 565080XX or 565300XX).
- Select the correct media type when loading it.

6 Driver print quality configuration:

- Describe the application and driver used by the customer.

  Application (specify):

  Driver:

  HP Windows driver:
  HP Windows PostScript driver:
  HP Mac PostScript driver:
  Non-HP driver/Varware (specify name):

  (Only for the driver that the customer is using)

  HP Windows Driver (See "Options"):
  - (Print) Quality: Set to "Best"
  - Paper Type (Media setting): Select the same media type as loaded media.

  HP PostScript Driver (See "Color" folder):
  - Print Quality: Set to "Best"

  Non-HP Driver/Varware:
  - Ask the customer to select the maximim PQ performance (Best).

To clarify if the reason of the problem is related with the print mode defined with the Non-HP Driver that might use Varware, try the following:

- Print the same sample using the Non-HP driver and their normal media.
- Print one of the internal demos or perform the service test "15 Area fill PQ plot" (details ▸ page 8-35) using HP Media and configuring the plotter/printer as indicated previously.

If the output obtained using the HP Solution is good and the one obtained through the 3rd party solution is bad, HP support organization should:

- Communicate to the customer that the problem is not in the printer and that he should address it through the 3rd party vendor support structure.

7 Accuracy Calibration (details ▸ page 7-6)

- Perform "Accuracy calibration" using HP Matte Film or High-Gloss Film (if not available, use Coated media or bond).

Print Modes

The plotters/printers have a large number of print modes. A print mode specifies how to interpret and put on media a set of bitmap planes, each of which consists of a sequence of rows. Each mode corresponds to a unique combination of the following parameters:

- Print resolution (300 dpi, 600 dpi).
- Number of passes per swath.
- Number of advances per swath.
- Number of swaths per advance.
- Print direction (unidirectional or bidirectional).
- Swath height (swath width).
- Carriage speed.
- Smart Area Fill (SAF).
- Print masks.
- Servicing states.
- Multiple dotting (K).

User input to print mode selection consists of the following:

- Choice of media type.
- Choice of print-quality setting (fast, normal, best).
- The language in which the file is received.
- The model of plotter/printer used.

Print-Mode Characteristics

Information on some of the print mode parameters is given in the following print mode parameter tables:

750C 755 CM

Color plots on Opaque Bond

This table is only applicable to DesignJets 750C and 755CM (C3198A).

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	300	2	0.32	1
Best	Bidir	18.33	300	4	0.32	2

750C *Plus* 755 CM

Color plots on Opaque Bond

This table is only applicable to DesignJets 750C Plus and 755CM (C3198B).

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	300	2	0.32	1
Best	Bidir	18.33	300	4	0.32	2
Best	Unidir	18.33	600 addr.	4	0.32	4

750C 750C *Plus* 755 CM

Color plots on Vellum and Translucent Media

This table is only applicable to DesignJets 750C, 750C Plus and 755CM.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	300	2	0.32	1
Best	Bidir	18.33	300	4	0.32	2

750C 750C *Plus* 755 CM

Color plots on Heavy-Coated Paper

This table is only applicable to DesignJets 750C, 750C Plus and 755CM.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Unidir	18.33	300	2	0.32	2
Best	Unidir	18.33	300	4	0.32	4

750C

Color plots on Coated Paper

This table is only applicable to DesignJet 750C.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Unidir	18.33	300	2	0.32	1
Best	Unidir	18.33	300	2	0.32	2

750C *Plus*

Color plots on Coated Paper

This table is only applicable to DesignJet 750C Plus.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Unidir	18.33	300	2	0.32	1
Best	Unidir	18.33	300	2	0.32	2
Best	Unidir	18.33	600 addr.	4	0.32	4

755 CM

Color plots on Coated Paper

This table is only applicable to DesignJet 755CM (C3198A).

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Unidir	18.33	300	2	0.32	2
Best	Unidir	18.33	300	4	0.32	4

755 CM

Color plots on Coated Paper

This table is only applicable to DesignJet 755CM (C3198B).

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Unidir	18.33	300	2	0.32	2
Best	Unidir	18.33	300	4	0.32	4
Best	Unidir	18.33	600 addr.	4	0.32	4

750C 755 CM

Color plots on Matte Film

This table is only applicable to DesignJets 750C and 755CM (C3198A).

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Bidir	18.33	300	2	0.32	1
Normal	Bidir	18.33	300	2	0.32	1
Best	Bidir	18.33	300	4	0.32	2

750C *Plus* 755 CM

Color plots on Matte Film

This table is only applicable to DesignJets 750C Plus and 755CM (C3198B).

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Bidir	18.33	300	2	0.32	1
Normal	Bidir	18.33	300	2	0.32	1
Best	Bidir	18.33	300	4	0.32	2
Best	Unidir	18.33	600 addr.	4	0.32	4

750C
750C *Plus*
755
CM

Color plots on Clear Film and High-Gloss Film

This table is only applicable to DesignJets 750C, 750C Plus and 755CM.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Normal	Unidir	18.33	300	4	0.32	4
Best	Unidir	18.33	300	6	0.32	4

750C
750C *Plus*
755
CM

Color plots on High-Gloss Photo and Semi-Gloss Photo

This table is only applicable to DesignJets 750C, 750C Plus and 755CM.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Normal	Unidir	18.33	300	4	0.32	4
Best	Unidir	18.33	300	6	0.32	4

Monochrome plots on Opaque Bond, Vellum and Translucent Media

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Bidir	36.66	300	1	0.48	1
Normal	Bidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	600	1	0.32	1
Best	Bidir	18.33	300	2	0.32	2
Best	Bidir	18.33	600	2	0.32	2
Best	Unidir	18.33	600	2	0.32	2

700
750C
750C *Plus*

Monochrome plots on Coated Paper

This table is only applicable to DesignJets 700, 750C and 750C Plus.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Bidir	36.66	300	1	0.32	1
Normal	Bidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	600	1	0.32	1
Best	Bidir	18.33	300	2	0.32	2
Best	Bidir	18.33	600	2	0.32	2
Best	Unidir	18.33	600	2	0.32	2

755 CM

Monochrome plots on Coated Paper

This table is only applicable to DesignJet 755CM.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Bidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	300	2	0.32	2
Normal	Bidir	18.33	600	2	0.32	2
Best	Bidir	18.33	300	4	0.32	4
Best	Bidir	18.33	600	4	0.32	4
Best	Unidir	18.33	600	4	0.32	4

Monochrome plots on Clear Film, Heavy Coated Paper and Matte Film

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Bidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	300	2	0.32	2
Normal	Bidir	18.33	600	2	0.32	2
Best	Bidir	18.33	300	4	0.32	4
Best	Bidir	18.33	600	4	0.32	4
Best	Unidir	18.33	600	4	0.32	4

750C
750C *Plus*
755 CM

Monochrome plots on High-Gloss Film, High-Gloss Photo and Semi-Gloss Photo

This table is only applicable to DesignJets 750C, 750C Plus and 755CM.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	36.66	300	4	0.32	4
Fast	Bidir	18.33	600	1	0.32	1
Normal	Unidir	18.33	300	4	0.32	4
Normal	Bidir	18.33	600	1	0.32	1
Best	Undir	18.33	300	4	0.32	4
Best	Bidir	18.33	600	1	0.32	1

How do I select the print mode?

The following table details how the print mode affects the relevant parameters:

How does the customer select a print mode?	Parameters affected	Software control settings		Printer settings
		RIP/Varware	HP drivers	
Media Selection (1)	• Number of passes • Pen temperature • Carriage speed • Dry time (between passes and before cutting) • True/comp. black	Varware (all parameters except for pen temperature)		• Media selected (HP drivers)) • The pen temperature depends uniquely on the printer settings)
Media Selection (2)	• Color map	RIP or Application	Media type (non-PostScript HP Windows driver)	Media selected (HP PostScript drivers)
Print Quality	• Number of passes • Carriage speed • Dry time (between passes and before cutting) • True/comp. black	Varware	Print Quality or Quality	Print Quality (for demos and Area fill PQ plot)
Dry Time	• Dry time (between passes and before cutting)	Varware		Dry time (only using HP drivers
Lightness	• Pen temperature			Lightness

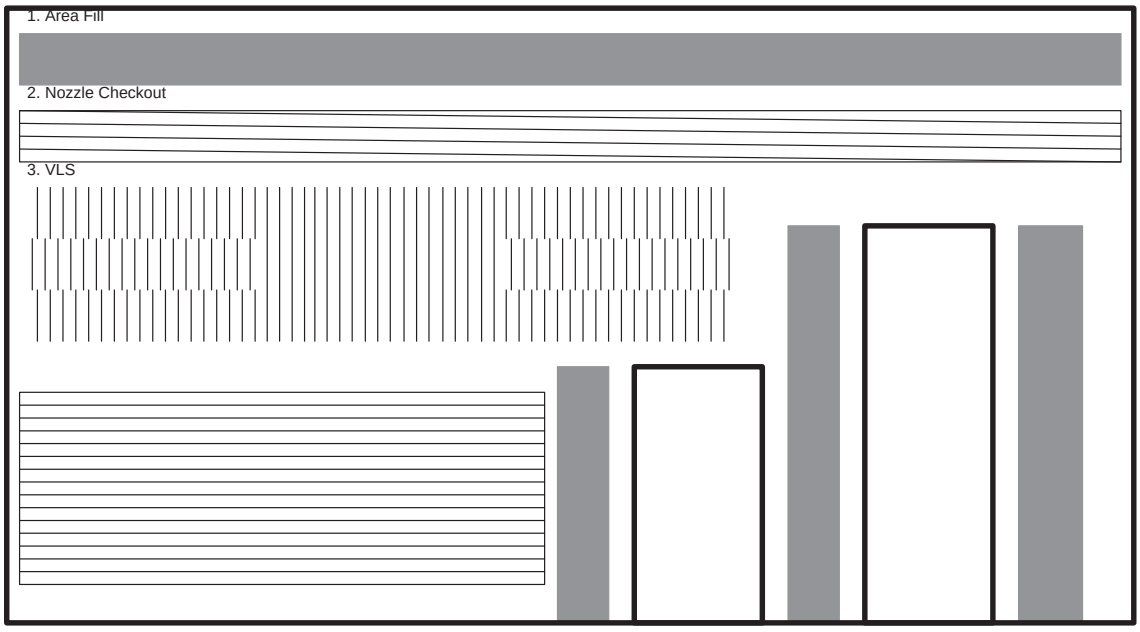
Print-Quality Diagnostic Plots

CAD 2-D Monochrome Plot (Service Test 13 ➧ page 8-33)

Objectives

The main objectives of this plot (represented below) is to check the vertical-line straightness of monochrome lines. The plot can be done in a unidirectional or bi-directional mode, so you can distinguish the theta-Z error from the bi-directional one.

The second objective is to check performance of the cartridge. The plot includes an area fill, and a number of parallel lines that show up directional problems. There is also a nozzle checkout with which you can identify faulty or weak nozzles.



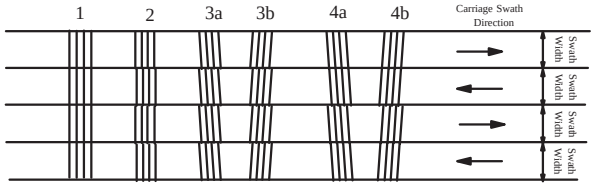
Print Modes

A special print mode is used to print the plot without adding noise to the data. This is independent of the print-quality and media settings on the front panel. The following are the parameters of this print mode:

- Two possible printing directions:
  - Unidirectional.
  - Bi-directional.
- Monochrome.
- Resolution 600 dpi.
- Swath advance of 0.32 inches (192 nozzles).
- 1 pass per swath.

Vertical Line Straightness (VLS)

If you look very closely at a vertical line produced by the plotter, you will notice that it's not perfectly straight. This is because, between consecutive swaths, there is usually some error in accuracy: a vertical line in one swath may be a little to the left or a little to the right of the line plotted in the previous swath. Depending on the causes of the error, lines that are supposed to be vertical may appear as shown below:



1	No error
2	Bidirectional error
3a	Theta–Z error
3b	Theta–Z error
4a	Combined error
4b	Combined error

Bidirectional Error

Error numbered 2 above is called a bidirectional error. If you print the same plot using a unidirectional print mode, the error should not appear. (Print modes ➧ 9-5.)

This error can occur for various reasons, including:

- Encoder-strip slots are damaged or dirty.
- Friction between carriage bushings and slider rod:

Theta-Z Error

Errors numbered 3a and 3b are called Theta-Z errors. They appear when the rows of nozzles on a cartridge are not perpendicular to the carriage axis (Y-axis).

This error can occur for various reasons, including:

- Badly seated cartridge.
- Faulty cartridge.
- Faulty carriage.

Corrective Actions

- Perform the pen alignment test using white media ➧ page 8-40.
  Avoid the use of glossy media as the black pen cannot be aligned using this type of media.
- Perform the line-sensor calibration ➧ page 7-5 and perform the pen alignment test again.
- Replace all cartridges.
- Replace the carriage ➧ page 6-34.
- Troubleshoot the EEROM and the Main PCA.

Nozzle Check-Out

Note that, to print the nozzle check-out, the central nozzles of the cartridges have been used. So the numbers of the nozzles do not correspond to the actual numbers. If you want to test all the nozzles of the cartridges, you should perform the "Nozzle Print Test" ➧ page 8-32.

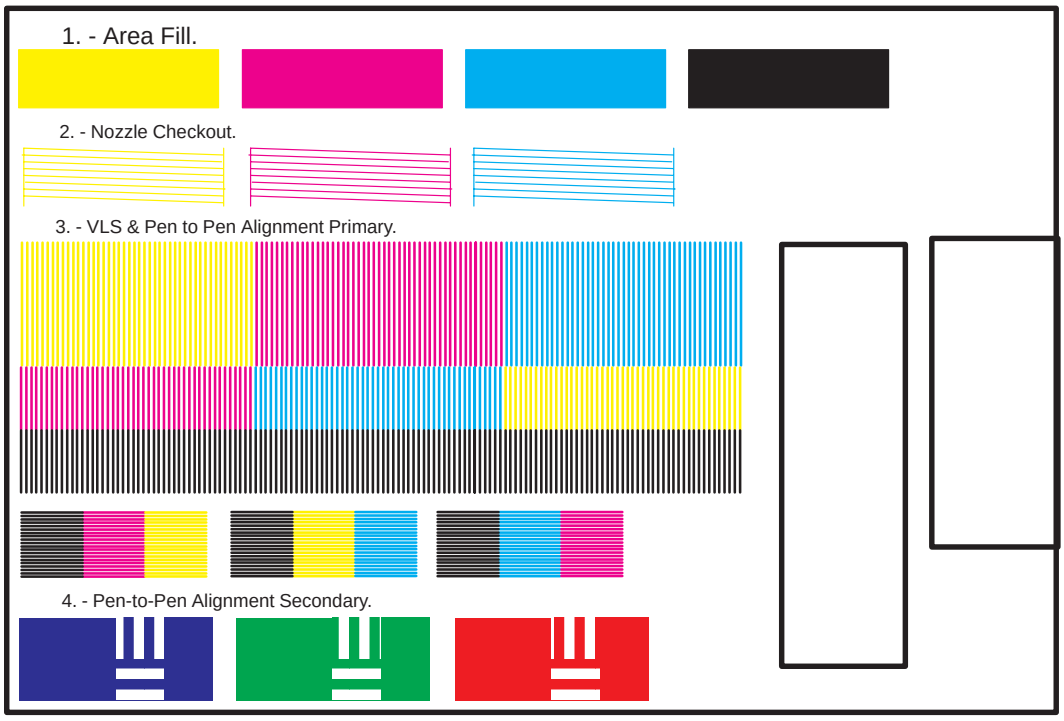
Misdirection Pattern

The main purpose of this plot is to qualitatively validate the pen-to-pen alignment. It also provides information on the pen performance, as it includes a nozzle check-out and area fill.

CAD Color Diagnostic Plot (Service Test 14 ➧ page 8-34)

Objectives

The main purpose of this plot is to qualitatively validate the pen-to-pen alignment. It also provides information on the cartridge performance, as it includes a nozzle check-out and area fill.



Print Modes

This plot also uses a special print mode, independent of the front-panel settings. The following are the parameters that define the print mode:

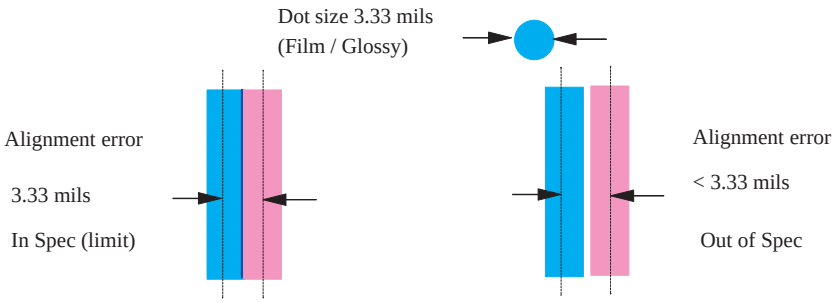
- Unidirectional.
- Color.
- Resolution 300 dpi (addressable 600 dpi for HP DesignJet 750C Plus and 755CM model C3198B).
- Swath advance = 0.32 inches (using 96 nozzles in the color pens and 192 in the black pen).
- 1 pass per swath.

Pen-to-pen Alignment verification

The specification for the maximum pen-to-pen alignment error is 3.33 mils. Use the plot to calculate the error.

Pattern 3 (on the CAD color diagnostic pot) contains vertical and horizontal lines of the four basic colors (cyan, magenta, yellow and black). This is a worst case situation, which provides qualitative information.

Pattern 4 (on the CAD color diagnostic pot) includes one square and horizontal and vertical lines in red (yellow plus magenta), blue (cyan plus magenta), and green (yellow plus cyan). The horizontal and vertical lines can be used to verify whether the alignment between the cartridges used to print them is within the required specification. The lines are one pixel in thickness. If the plot is printed on “matte film” media the dot size is approximately 3.33 mils diameter (the same value as the alignment specification). Focus on one horizontal or vertical blue line (see figure below), that is generated by two lines of cyan and magenta. If there is a misalignment between the two cartridges, bigger than 3.33 mils, the lines will be this distance apart. In this case, there will be a white line between the magenta and the cyan, as the dots of each color will not come in contact. (The distance will be bigger than the dot size.) When there is a blue line between the magenta and the cyan, then the distance between the lines is smaller than 3.33 mils, hence, the alignment error is within the required specifications.



Corrective Actions

If the pen-to-pen alignment error is out of specification:

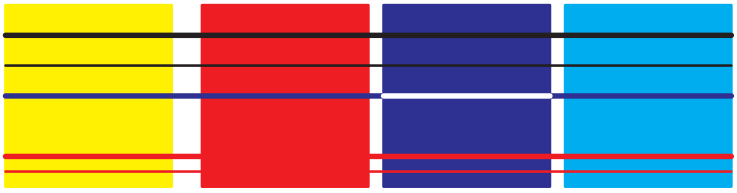
- Perform the pen alignment test using white media ➧ page 8-40.
- Perform the line-sensor calibration (details ➧ page 7-5) and perform the pen alignment test again.
- Replace all cartridges.
- Replace the carriage ➧ page 6-34.
- Troubleshoot the EEROM and the Main PCA.

Area-Fill Diagnostic Plot (Service Test 15 ⧫ page 8-35)

Objectives

This plot is intended to check the print-quality performance when printing area fills. The plot presents a worst case situation for the main-ink media interaction problems:

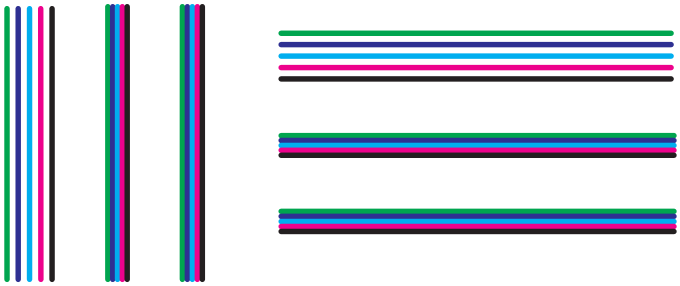
1.



2.

SMEAR TEXT SMEAR TEXT SMEAR TEXT SMEAR TEXT
SMEAR TEXT SMEAR TEXT SMEAR TEXT SMEAR TEXT
SMEAR TEXT SMEAR TEXT SMEAR TEXT SMEAR TEXT

3.



4.

Print Modes

In this case, the print modes depend on the front-panel settings, so that it is possible to verify influence on print-quality performance. It is possible to modify the print modes using the following variables:

- print-quality: Fast, Normal and Best. The number of carriage passes per swath depends on the print-quality and media-type settings.
- Lightness: Lighter, Normal or Darker. This reduces or increases the drop volume of the cartridges modifying nozzle temperature.
- Dry time. This increases the minimum time between swaths and before cutting which we can find by printing in certain conditions (media & print mode).

Print Quality Problems

The following is a list of print quality problems that you may find when printing in certain conditions.

Cockle

Description

The surface of the media wrinkles in saturated area fills.

Causes

Ink media interaction during the drying process. The affected medias are:

- Translucent Bond.
- Natural tracing paper.
- Japanese tracing paper.
- Vellum.
- Coated paper (saturated colors).
- Opaque bond.

The worst case occurs in cold and dry conditions.

Corrective Actions

- Print in multi-pass print modes.
- Set the lightness to “lighter” to reduce the amount of ink used.

Coalescence

Description

Uneven area fill produced by accumulations of ink, showing up as a reptile skin pattern.

Causes

The chemistry of the ink attracts drops and produces local ink aggregates of a different color. Affects all area fills but the most sensitive are the secondary colors. The worst case is with green (yellow + cyan).

Corrective Actions

- Plot in an interlaced print mode thus increasing the number of passes over the media .
- Set the lightness to “lighter” to reduce the amount of ink used.

750C
750C Plus
755
CM

Bleeding

Description

Color inks, printed side by side, mix together at the border. Also occurs at area-fill borders with a high color saturation.

Causes

The ink is not properly absorbed by the media and spreads from its original position. Media types affected are bonds.

Corrective Actions

Plot in an interlaced print mode (Best), thus increasing the number of passes over the media. Set the lightness to “lighter” to reduce the amount of ink used.

Feathering

Description

Ink spreads along the media fibers, affecting the edge roughness of the lines and text.

Causes

The medias does not control the dot growth. The affected media types are:

- Bonds.
- Natural tracing paper.
- Vellum.
- Translucent bond.

Some third party media types have unacceptable results.

Too large a drop volume increases the severity of the problem.

Corrective Actions

Plot in an interlaced print mode (Best), thus increasing the number of passes over the media. Set the lightness to “lighter” to reduce the amount of ink used. Use HP media.

Migration (Black)

Description

In area fills, ink accumulates in the external part of the swath, where the black is more saturated.

Causes

Ink not properly absorbed by the media, and surface forces, push the black ink to the borders (due to the chemistry of the black ink). All the CAD media types except coated paper are affected.

Corrective Actions

Plot in an interlaced print mode (Best) thus increasing the number of passes over the media. Set the lightness to “lighter” to reduce the amount of ink used. Increase the dry time to reduce the migration in multi-pass print modes.

750C
750C *Plus*
755
CM

Halo

Description

There is a white border between black and color area fills.

Causes

There is a reaction between the inks that changes the tensional forces at the edge, causing the black ink to move away from the color.

This is also a common problem for all the CAD media types except the coated media.

Corrective Actions

Plot in an interlaced print mode (Best), thus increasing the number of passes over the media.

Banding

Description

There are repetitive bands in the area fills.

Causes

The following are the main causes of this problem:

- X-axis advance error: This error causes a variation of hue between consecutive bands. The hue is constant within each band. Nozzles are misaligned from one swath to the next.
- Cartridge nozzles out, weak or misdirected: These problems generate horizontal lines of different color in area fills. In this case, instead of affecting the complete swath, the problem is restricted to the particular nozzles that are failing.

In both cases, drop volume can help to hide the problems. A low drop volume makes the problems more visible.

Corrective Actions

- X-axis advance error: Perform the accuracy calibration ➧ page 7-6. If this does not fix the problem, troubleshoot the X-axis system (mark position test ➧ page 8-44). If necessary, replace the X-axis motor ➧ page 6-25.
- Cartridge problems: Set the plotter to multi-pass print mode. Replace the cartridges. Check the wipers and caps of the Service Station and if necessary, replace the service station ➧ page 6-42.
- Drop volume too small: Troubleshoot the pen thermal management system, the TTOE, the carriage electronics and the cartridge.

10

Product History and Service Notes

Introduction

This chapter describes the differences between earlier versions of the plotters and the latest version documented in this manual.

Serial-Number Format

The plotter serial number is composed of 10 letters and digits, for example ESA5900248.

- In the first two positions is the code for the country of manufacture of the plotter. In the example above, this is ES, which is the code for Spain.
- In the third position is the revision letter of the plotter. The letter A identifies the original version of the plotter. The next revision would have the letter B and so on.
- In the fourth position is the last digit of the year of manufacture. In the example above, this is 5 for plotters made in 1995.
- In the fifth position is the month of the year. (October is represented by the letter A, November by B, and December by C.) In the example above, the digit is 9, which is September.
- The remaining five digits distinguish the plotter from others manufactured in the same country in the same month. In the example above, these are 00248.

Identifying a Printed Circuit Assembly

The plotters have the following major identification features:

Part Number

PCAs having the same part number are directly interchangeable. If a PCA is revised in any way that makes it non-interchangeable with previously issued PCAs of a particular part number, a new part number is assigned to the revised PCA.

Revision Letter

This letter identifies the most recent revision to the etched circuit pattern. The original issue is identified with the letter A. If the master artwork for a printed circuit board is revised in order to alter performance or manufacture, the revision letter is changed to the next letter in the alphabet.

Firmware Revision Level

To find out which firmware revision the plotter is using:

1. At the “Status / Ready” message press the **Enter** button.
2. Use the **Arrow** buttons to scroll to the “Utilities” menu display and press the **Enter** button.
3. Use the **Arrow** buttons to scroll to the “Statistics” menu display and press the **Enter** button.
4. Use the **Arrow** buttons to scroll to the “Code rev =”

Plotter Support Information on the World Wide Web

A special World Wide Web site has been produced to aid Service Engineers and inform them on latest developments. This site can be found at the following address:

http://plotter-support.bpo.hp.com/

You can access this site from a PC or UNIX workstation to obtain the following information:

- General Information.
- Documentation (latest versions of the Service Manuals and User Guides).
- Training.
- Service Notes.
- Newsletters.
- Diagnostics (Information ➧ page 8-54).
- Connectivity.

Firmware History for HP DesignJets 750C and 755CM (Model A)

Date: 1 April 1996

Service Note: C3195A-06
C3196A-08
C3198A-06

Supersedes: C3195A-08

Products: HP DesignJet 750C (C3195A)
HP DesignJet 750C (C3196A)
HP DesignJet 755CM (C3198A)

Serial Numbers: C3195A ESA0000000/ESA6207614
C3196A ESA0000000/ESA6231908
C3198A ESA0000000/ESA6206073

To be performed by: Customer

Parts Required:

Part Number	Description	Qty
C3195-60135	FWM. SIMM A.02.10	1

Situation

This Service Note contains the following information:

1. A list of problems solved in each one of the firmware releases.
2. The serial numbers of the units shipped with each release.
3. The known problems of the latest release.

Problems Solved in Each Firmware Release

Note: By default, the problems solved are affecting all the previous releases.

Firmware A.02.10

- HP-GL2 files hangs the unit, sometimes showing a system error 0000D8.
- Varware problem: Now black dot replication can be done according to Varware specifications.
- Varware problem 2: Dry time was accepted in “tics” and it should be in seconds.

Firmware A.02.09

- The print modes with Glossy media and Print Quality Best are printed in 6 passes.
- Provides a significant improvement in paper advance error compensation, which is optimized when we add a line on the mark encoder (Refer to Service Note ➧ page 10-18).
- Possible media jam when powering on the unit (3% or less). This problem is only present in firmware revision A.02.08.
- Corner case when it does not find mark encoder, it ejects media continuously. This problem is only present in firmware revision A.02.08.
- The I/O time-out was applied when sending PostScript jobs to the MIO port using all protocols but EtherTalk (so, TCP/IP, Novell and DLC/LLC) in previous versions. Since the front panel I/O time-out was 30 minutes by default, the symptom was having blocked the I/O during this amount of time. The workaround was to manually set the front-panel time-out to 30 seconds.
- When printing through a Centronics (not Bi-tronics) port the plotter hangs after printing around 30 PostScript plots. The problem can also occur with HP-GL2 files but with less severity. This problem only occurs in firmware revision A.02.08.
- Plotter hangs after sending several files with small margins. This bug is present in firmware revision A.02.08.

Firmware A.02.08

- Banding Reference Localization of the mark encoder during the initialization: Firmware revisions A.02.03 and A.02.04 have a certain variability detecting the reference of the paper advance correction (mark encoder) during the initialization at the power up. If the error is too high, the paper advance correction will not be efficient. This problem affects only the units that require the paper advance correction (approximately about 30% of our units).
- The accuracy calibration changed to improve the performance of the calibration.
- Banding and pattern when printing with the following configuration:
  - Monochrome.
  - Coated, Heavyweight and Bond.
  - Best and Normal.
- When the plotter is set to SMALL MARGINS, the black pen is not serviced after cutting the print. As a result, the black pen dries and may have start-up problems. The new code applies servicing to this pen after cutting.
- Japanese/Portuguese/Spanish/German localizations corrected.
- Service Configuration plot improvements :
  - Mono not grayscaling colors.
  - Showing all K pen drop detect infos.
- Plotter hangs after 20 plots when “Maintenance Advised” message shows up on the front panel display.
- MIO & JETADMIN: “Out of memory” when receiving PML requests. JetAdmin polls the printer every 2 seconds, and the PML requests sent to it remain in its memory. That means that the memory is filled with PML packets. This fact can fill the memory (DesignJet 750C with no extra memory: only 4 MB) after 55 minutes if only one device has JetAdmin opened during all that time. If there are two, the time to obtain an “Out of memory” message is reduced to a half, and so on.

- MIO 5.0 support: The plotter officially only supports MIO cards which provide MIO 6.0 functionalities. With MIO cards that do not provide MIO 6.0, the plotter reports a System Error 040601. But if it is an MIO 5.1 HP JetDirect card, this error is cleared after pressing “Enter”. The plotter will work normally, but it will not be able to use any PML functionality. This is not a problem for HP JetDirect cards, as long as they have FLASH to be re-programmed. The MIO 6.0 version A.03.15 works perfectly. Because the plotter does not officially support MIO 5.0, problems could be the same with 3rd party cards.
- JetDirect EX family: When the plotter uses a JetDirect EX, JetAdmin (Windows /Unix) always report “Status: online” even if the Cover is Open (same result with Lever Up and Out of Media). If you continue asking the printer status, the error event (e.g. Cover Open) is seen once every 10 times.
- Fixed corner case problems in HP-GL / HP-GL2 instructions. Dashed lines printed with LTO are printed continuously.
- PostScript: When printing in an area which is located between two white areas (e.g it is non-printed areas), some swaths can be lost. This could occur, for example, when printing a line. The result would be a lighter color than expected. Or, if printing two separated lines with the same color, one of them could be lighter than the other. The occurrence of the problem depends on the position on the page and on the width of the printed areas. This means that you can obtain the correct color by moving the line. There is a workaround: If printing in color, the problem never appears if the line width is 5.5 mm(0.22 inches) or more. If printing in monochrome, the line should be 6.8 mm (0.27 inches) or more in width to be sure that no swaths are lost.
- PostScript: When canceling a Postscript print, the Front Panel is reports a “Ready” message when in fact it is canceling.
- DISPLAY DATA doesn’t not work after sending HP-GL2 files. The files received afterwards are printed.
- Plotter hangs when sending files with many bitmap fonts.
- Printing in small margins, after canceling one file, it can be printed attached with the following file.

Firmware A.02.05

Release uniquely used in the Japanese Market.

- Corrects some localization errors
- Smart Area fill problem (in some cases, one pass not done).

Firmware A.02.04

- Dry times on semi-gloss and high-gloss photo medias (the dry times in A.02.03 were too short, which led to ink coalescence problems)
- In Varware, the dot replication control had a problem.

Firmware A.02.03

Original release

Serial Numbers

The serial number ranges of the units that have been shipped with each firmware release are listed as follows:

- Firmware A.02.10
  - C3195A ESA0000000/ESA6207615
  - C3196A ESA0000000/ESA6231909
  - C3198A ESA0000000/ESA6206074
- Firmware A.02.09
  - C3195A ESA6106789/ESA6207614
  - C3196A ESA6125903/ESA6231908
  - C3198A ESA5B02307/ESA6206073

  The following units requested the improved paper advance error compensation algorithm (around 20%):
  - C3195A ESA5B05605/ESA6106789
  - C3196A ESA5B22102/ESA6125903
- Firmware A.02.08
  - C3198A ESA5A00000/ESA5B02306
  - Some codes were also shipped with C3195A/C3196A.
- Firmware A.02.05
  - Release uniquely used in the Japanese Market.
- Firmware A.02.04
  - C3195A ESA5804374/ESA6106788
  - C3196A ESA5804374/ESA6125902
  - C3198A ESA0000000/ESA5A00000
- Firmware A.02.03 (original release)
  - C3195A ESA0000000/ESA5804373
  - C3196A ESA0000000/ESA5804373

Known Problems in the Last Firmware Revision A.02.10

This problem will be solved in the following firmware releases.

- None of the HP JetDirect EX cards work with the DesignJet 755CM in a MAC environment.

Solution

- Install firmware revision A.02.10 (pn C3195-60135).
- Verify if the mark encoder has a black line or a notch in the middle. This is needed to optimize the performance of the paper advance calibration. In case this line or the notch is not present, you should install it (Refer to Service Note ➧ page 10-18). The following units were shipped without the mark (even though some of them were reworked in the Distribution Centers).
  Serial Numbers:
  - C3195A ESA0000000/ESA5B05350
  - C3196A ESA0000000/ESA5B20304
  - C3198A ESA0000000/ESA5B02306
- Perform the accuracy calibration (details ➧ page 7-6) when you are upgrading from firmware revision A.02.08 or lower. To get the best performance use HP Matte Film media.

Administrative Information

Classification:	Modification Recommended
Standards:	0.1 Hour
Action Category:	On Failure
Location Category:	Customer Infallible
Service Inventory:	N/A
Used Parts:	N/A
HP Responsible Until:	1 April 1998
Author Entity:	EV/F900

Problems with the Entry Platen

Date: 1 November 1995

Service Note: C3195A-01
C3196A-01

Supersedes: None

Products: HP DesignJet 750C (C3195A)
HP DesignJet 750C (C3196A)

Serial Numbers: C3195A ESA0000000/ESA5700335
C3196A ESA0000000/ESA5700644

To be performed by: HP-Qualified Personnel

Parts Required:

Part Number	Description	Qty
C3195-00002	Entry Platen - D-size	1
C3196-00002	Entry Platen - E-size	1

Situation

The entry platen, under certain circumstances (bent), can:

- Cause the media sensor not to detect the presence of media.
- Damage the media sensor.

If this happens, the media fails to load.

Solution

A new entry-platen has been introduced to avoid this problem.

Removing and Installing the New Entry Platen :

1. Remove the window ➧ page 6-13.
2. Remove the center cover ➧ page 6-14.
3. Remove the left and right endcovers ➧ pages 6-16 and 6-17.
4. Disengage the media sensor cable from the clamps and remove the media sensor from the entry platen.
5. Lower the rollfeed cover to the open position.
6. Use a Torx T-15 screwdriver to loosen the wedge screws that attach the entry platen to the left and right sideplates.

7 Pull the entry platen down, forward and clear of the plotter.

8 Install the new platen following the above instructions in the reverse order.

Administrative Information

Classification: Modification Recommended
Standards: 0.5 Hour Labor
Action Category: On Failure
Location Category: On-Site
Service Inventory: N/A
Used Parts: Scrap
HP Responsible Until: 1 Nov 1997
Author Entity: HV/F900

Problems that Cause Paper Advance Errors

Date: 1 February 1996

Service Note: C3195A-02A
C3196A-02A
C3198A-01A

Supersedes: C3195A-02
C3196A-02
C3198A-01

Products: HP DesignJet 750C (C3195A)
HP DesignJet 750C (C3196A)
HP DesignJet 755CM (C3198A)

Serial Numbers: C3195A ESA0000000/ESA5B05350
C3196A ESA0000000/ESA5B20304
C3198A ESA0000000/ESA5B02306

To be performed by: HP-Qualified Personnel

Parts Required:

Part Number	Description	Qty
C3195-60142	Paper Advance Kit	1

Situation

There are two main problems that generate paper advance errors:

Problem 1 - “AVION” - Back tension

One problem has been found when the plotter finishes a plot, advances the paper, cuts it and then rewinds to plot the next one. In this process, the paper roll itself is not rewound and thus there is a portion of paper which has been unrolled for cutting.

The high paper back tension produced by the brake of the roll-feed module causes the X-axis motor worm to bend slightly just at the moment when it starts to pull the paper from the roll and thus resulting in a one off swath error. This phenomena is called “AVION” and looks very similar to a “Banding” phenomena.

This phenomena occurs only once at the beginning of the print. This band is normally located between 65 and 75 mm from the top border of the paper.

Problem 2 - Rollcover screws / spindle interaction

The spindle spacer or the spindle itself can interfere with the screws of the roll-feed covers. This can cause some paper advance errors which appear as bands on the image prints.

Solution to Problem 1: “AVION” - Back tension

Replace the small spring of the roll-feed by a new one that applies the correct force (spring included in the kit).

Procedure

1. Remove the center window ➧ page 6-14.
2. Remove the right end-cover ➧ page 6-17.
3. Use a pair of pliers to remove the small spring from the rollfeed module
4. Install the new spring.

Solution to Problem 2: Rollcover screws / spindle interaction

Replace the screws with flat-head ones so that they do not interfere with the spindle or the spindle spacer.

Procedure

1. Open the rollfeed cover.
2. Identify the three screws (at each side) that hold the cover with the hinge.
3. Replace the screw that is in the lowest position (only one per side).

Administrative Information

Classification:	Modification Recommended
Standards:	0.5 Hour Labor
Action Category:	On Failure
Location Category:	On-Site
Service Inventory:	N/A
Used Parts:	N/A
HP Responsible Until:	1 Feb 1998
Author Entity:	EV/F900

The Aerosol Phenomena Causing a Servo Shutdown Error

Date: 15 December 1995

Service Note: C3195A-03
C3196A-03

Supersedes: None

Products: HP DesignJet 750C (C3195A)
HP DesignJet 750C (C3196A)

Serial Numbers: C3195A ESA0000000/ESA5700250
C3196A ESA0000000/ESA5700400

To be performed by: HP-Qualified Personnel

Parts Required:

Part Number	Description	Qty
C3195-60140	Pen Carriage Assembly	1

Situation

During very intensive plot workload (high duty cycle), the aerosol phenomena may appear inside the plotter as the ink particles are stacking on the carriage rails causing high friction. This happens with the old type of carriage (with carbon bushings). The result is a Servo Shutdown error.

Solution

The pen carriage has been reworked to avoid this problem. It now has the new type of bushings (Aramide type bushings).

Removing and Installing the New Pen Carriage

1. Remove the window ➧ page 6-13.
2. Remove the center cover ➧ page 6-14.
3. Remove the left and right endcovers ➧ pages 6-16 and 6-17.
4. Remove the encoder strip ➧ page 6-27.
5. Remove the trailing cable ➧ page 6-36.
6. Slide the carriage to the right side of the plotter.
7. Grasp the carriage rear preload bushing and move the carriage to the right side, free from the slider rods.

8 Separate the rear bushing and preload spring from the carriage and carefully remove the carriage and main drive belt from the plotter.

9 Remove the drive belt from the carriage.

10 Install the new pen carriage following the above instructions in the reverse order.

Administrative Information

Classification: Modification Recommended
Standards: 1 Hour Labor
Action Category: On Failure
Location Category: On-Site
Service Inventory: N/A
Used Parts: Returned to SME/HP Grenoble
HP Responsible Until: 15 Dec 1997
Author Entity: HV/F900

Longer Screws Make Legs More Stable

Date: 1 February 1996

Service Note: C3195A-04
C3196A-06
C3198A-04

Supersedes: None

Products: HP DesignJet 750C (C3195A)
HP DesignJet 750C (C3196A)
HP DesignJet 750CM (C3198A)

Serial Numbers: C3195A ESA0000000/ESA5C05877
C3196A ESA0000000/ESA5C23782
C3198A ESA0000000/ESA5C02835

To be performed by: HP-Qualified Personnel

Parts Required:

Part Number	Description	Qty
C4696-60002	Legs Hardware Kit	1

Situation

In the initial hardware kit for the legs assembly we had the following problems:

1. The screws of the legs get loose when moving the plotter. This makes the unit sway, giving a perception of weakness.
2. When the units are shipped without disassembling the legs, the screws may come out and the legs collapse due to the vibration. This problem is affecting mainly dealers and the trade show units used in the Marketing Centers.

Solution

The screws have been replaced by longer ones and washers have been added. This solution has been tested and the results show that the sway problem has been solved in customers' units. However, it is not a good solution for units that are constantly moved or shipped mounted, like the ones in marketing centers.

To install the new hardware kit (C4696-60002) follow this procedure:

1. Verify that the screws of the legs do not have washers installed. If they already have washers, do not proceed with the following steps.
2. Without turning the plotter upside down, remove the old screws that attach the legs to the plotter.

3 Separate the unit from the legs.

4 Replace the old screws with the new ones. The new screws have the washers.

Administrative Information

Classification: Modification Recommended
Standards: 0.5 Hour Labor
Action Category: On Failure
Location Category: On-Site
Service Inventory: N/A
Used Parts: Scrap
HP Responsible Until: 1 February 1998
Author Entity: EV/F900

Install a Line on the Mark Encoder

Date: 1 February 1996

Service Note: C3195A-05
C3196A-07
C3198A-05

Supersedes: None

Products: HP DesignJet 750C (C3195A)
HP DesignJet 750C (C3196A)
HP DesignJet 750CM (C3198A)

Serial Numbers: C3195A ESA0000000/ESA5B05350
C3196A ESA0000000/ESA5B20304
C3198A ESA0000000/ESA5B02306

To be performed by: HP-Qualified Personnel

Parts Required:

Part Number	Description	Qty
N/A	D-size Matte Film Media	1
C3195-60141	Mark Label Kit	1

Situation

In firmware revisions A.02.09 or higher, the paper advance calibration algorithm was improved. In order to optimize its performance, modify the mark encoder so that the reference for the paper advance error compensation is more accurate.

Solution

A line or a notch is included in the middle of the mark encoder. In units that are in the range of serial numbers listed above, follow this procedure to add a line on the mark encoder.

Please, verify that your unit is within the serial number ranges that are quoted above. The units produced after these ranges will have a notch in the middle of the mark encoder, so the line will not be required.

Procedure to Install the Line on the Mark Encoder

After installing firmware revision A.02.09 or higher:

1. Switch-off the device.
2. Remove the media.

3 Switch-on the device.

4 Open the window cover and verify that the mark encoder is in the upper position on the right side of the roller platen. If the mark encoder is not in the upper position, then perform the Mark Position test ➧ page 8-44.

5 Clean the mark encoder using the cleaning wipes - HP 92193N. These wipes contain isopropyl alcohol. Allow a few seconds to ensure that the mark is dry.

6 Get a sheet containing the black adhesives lines. Identify the adhesive side (you may test it on a piece of paper).

7 Trim a piece of the sheet containing one black line.

8 Place the line in the center of the mark encoder, positioning it parallel to the platen roller.

9 Using a pen, softly rub on the back of the line.

10 Make sure that the:

- Line is properly stuck on the contact surface of the mark encoder
- Line is continuous and not broken.

11 If this is not the case, remove the line with a tool that can not damage the mark encoder and clean it again using the cleaning wipes. Then repeat the procedure from step 6.

12 Using matte film media, perform the accuracy calibration ➧ page 7-6.

Administrative Information

Classification: Modification Recommended
Standards: 0.5 Hour Labor
Action Category: On Failure
Location Category: On-Site
Service Inventory: N/A
Used Parts: N/A
HP Responsible Until: 1 February 1998
Author Entity: EV/F900

Problems with Pen Alignment

Date: 15 December 1995

Service Note: C3196A-04
C3198A-02

Supersedes: None

Products: HP DesignJet 750C (C3196A)
HP DesignJet 750CM (C3198A)

Serial Numbers: C3196A ESA0000000/ESA4508541 ESA5B21735
C3198A ESA0000000/ESA4508541 ESA5B02844

To be performed by: HP-Qualified Personnel

Parts Required:

Part Number	Description	Qty
C3195-60140	Pen Carriage	1

Situation

In some cases, when inserting the Cyan and Magenta cartridges, the plotter will try to align the cartridges but fails. The message “Alignment Error” is displayed on the front panel. This is caused by the inserted cartridges which cannot be aligned in the X-axis because the mechanical distance from the nozzles to the media is too big.

The “Alignment Error” display explained in the “User Manual” doesn’t refer to the insertion problem.

Solution

A new pen carriage has been introduced to enhance the pen insertion thus preventing the error.

Removing and Installing the New Pen Carriage

1. Remove the window ➧ page 6-13.
2. Remove the center cover ➧ page 6-14.
3. Remove the left and right endcovers ➧ pages 6-16 and 6-17.
4. Remove the encoder strip ➧ page 6-27.
5. Remove the trailing cable ➧ page 6-36.
6. Slide the carriage to the right side of the plotter.

7 Grasp the carriage rear preload bushing and move the carriage to the right side and free of the slider rods.

8 Separate the rear bushing and preload spring from the carriage and carefully remove the carriage and main drive belt from the plotter.

9 Remove the drive belt from the carriage.

10 Install the new pen carriage following the above instructions in the reverse order.

Administrative Information

Classification: Modification Recommended
Standards: 1 Hour Labor
Action Category: On Failure
Location Category: On-Site
Service Inventory: N/A
Used Parts: Returned to SME/HP Grenoble
HP Responsible Until: 15 December 1997
Author Entity: HV/F900

Air Flow from the Fan can Cause Spray and Misdirection

Date: 1 February 1996

Service Note: C3196A-05
C3198A-03

Supersedes: None

Products: HP DesignJet 750C (C3196A)
HP DesignJet 750CM (C3198A)

Serial Numbers: C3196A ESA0000000/ESA4508541
C3198A ESA0000000/ESA4508541

To be performed by: HP-Qualified Personnel

Parts Required:

Part Number	Description	Qty
C3195-40066	Fan Deflector	1

Situation

Air flow from the fan can cause spray and misdirection, generating a vertical band in certain prints on glossy media.

The band is on the left side and has a width of about 10 centimeters or 3.94 inches. It is only visible in certain area fills and shows up as:

- Hue change.
- Increase of the coalescence problem.
- Increasing the horizontal banding.

The problem affects only E-size plotters.

Solution

A new part has been designed to be installed in the Y-yoke. The Y-yoke is the metallic part mounted on the chassis between the two slider rods.

This part, called a fan deflector, deflects the air coming from the fan so that it does not affect the print quality.

The procedure to install the fan deflector is as follows:

1 Open the window.

2 Identify the Y-yoke, on the chassis, between the slider rods and behind the carriage belt.

3 Identify the cuts in the Y-yoke where the fan deflector is to be installed. These cuts are on the left side of the plotter.

4 Passing the fan deflector between the slider rods and the encoder strip, install the two front clips in the cut as shown in figures 1 and 2.

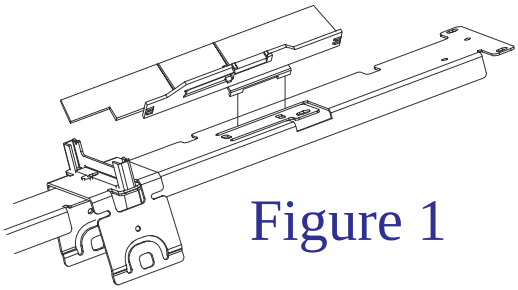


Figure 1

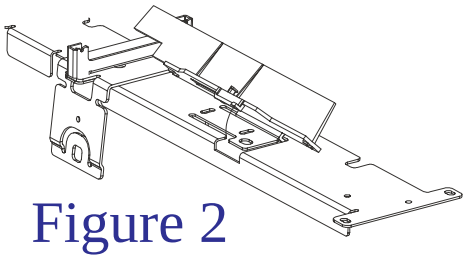


Figure 2

Take care not to cut yourself on the encoder strip inside the plotter.

5 Install the third clip as shown in figure 3.

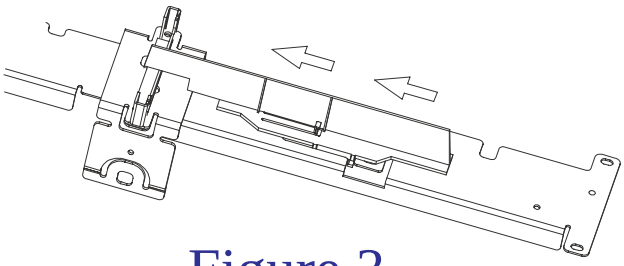


Figure 3

6 Move the fan deflector to the right of the plotter as shown in figures 4 & 5. You will hear a “click” sound when the deflector gets in its correct position.

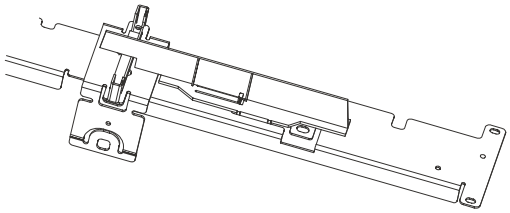


Figure 4

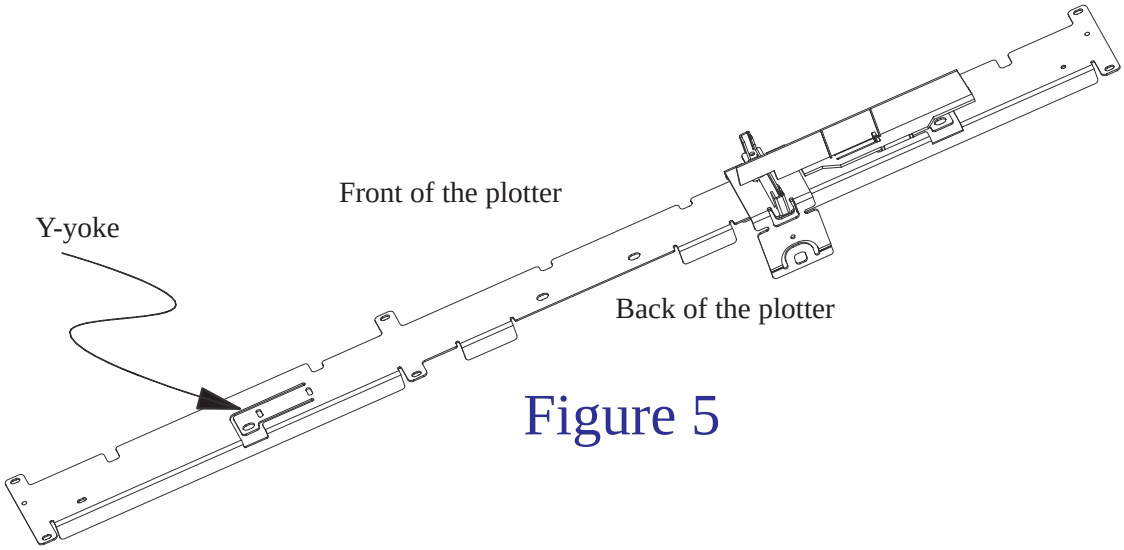


Figure 5

Administrative Information

Classification:	Modification Recommended
Standards:	0.1 Hour Labor
Action Category:	On Failure
Location Category:	On-Site
Service Inventory:	N/A
Used Parts:	N/A
HP Responsible Until:	1 Feb 1998
Author Entity:	EV/F900

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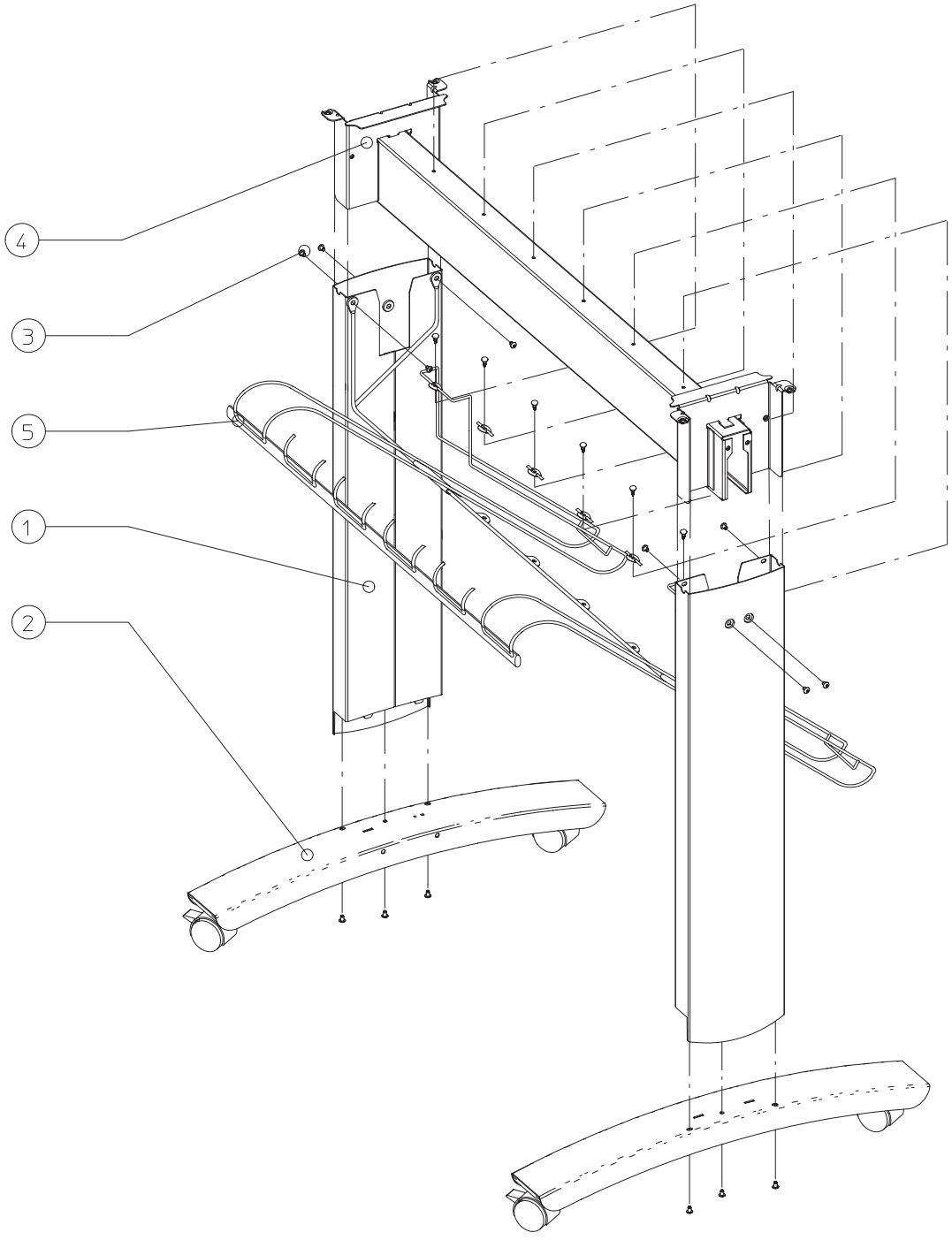
Parts and Diagrams

Legs

Reference on Drawing	HP Part Number	Quantity	Description
1	C3192-60002	2	Legs Assembly
2	C3192-60003	2	Foot Assebmly
3	C4696-60002	1	Hardware Kit
4	C3192-60001	1	X Brace Assembly (D/A1-size)
	C3193-60001	1	X Brace Assembly (E/A0-size)
5	C3195-60052	1	Paper Diverter Assembly (D/A1-size)
	C3196-60052	1	Paper Diverter Assembly (E/A0-size)

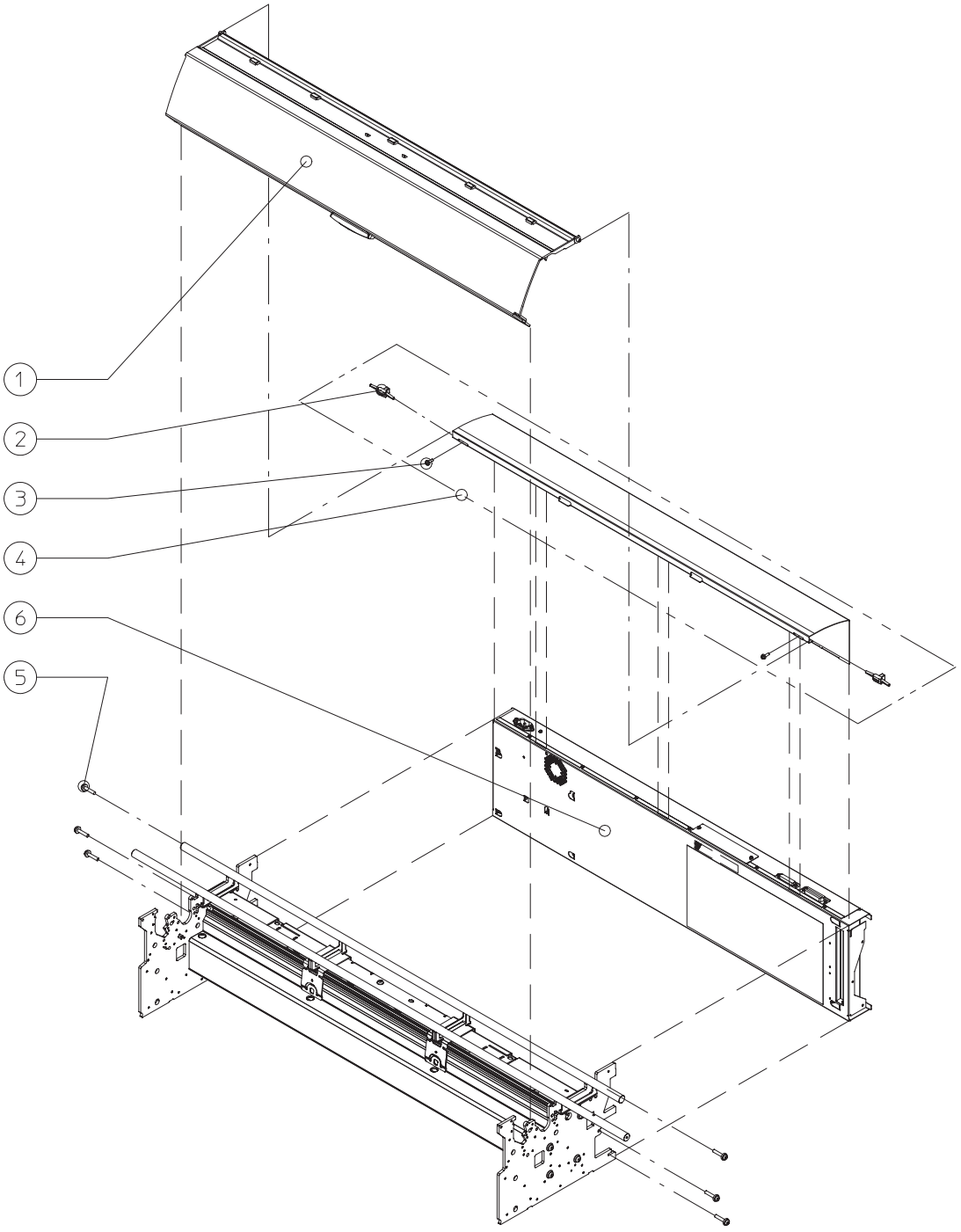


Legs

Window and Back Cover Assemblies

Reference on Drawing	HP Part Number	Quantity	Description
1	C4705-60087	1	Window Assembly (D/A1-size)
	C4706-60087	1	Window Assembly (E/A0-size)
2	C3195-40060	1	Center Cover Latch
3	0624-0771	1	Screw
4	C3195-60039	1	Center Cover Assembly (D/A1-size)
	C3196-60039	1	Center Cover Assembly (E/A0-size)
	C4705-60088	1	Unicover Assembly (D/A1-size) *
	C4706-60088	1	Unicover Assembly (E/A0-size) *
5	0515-2248	6	Screw
6	C4705-60092	1	Electrical Enclosure Assembly (D/A1-size)
	C4706-60092	1	Electrical Enclosure Assembly (E/A0-size)
–	C3195-00057	1	Safety Label

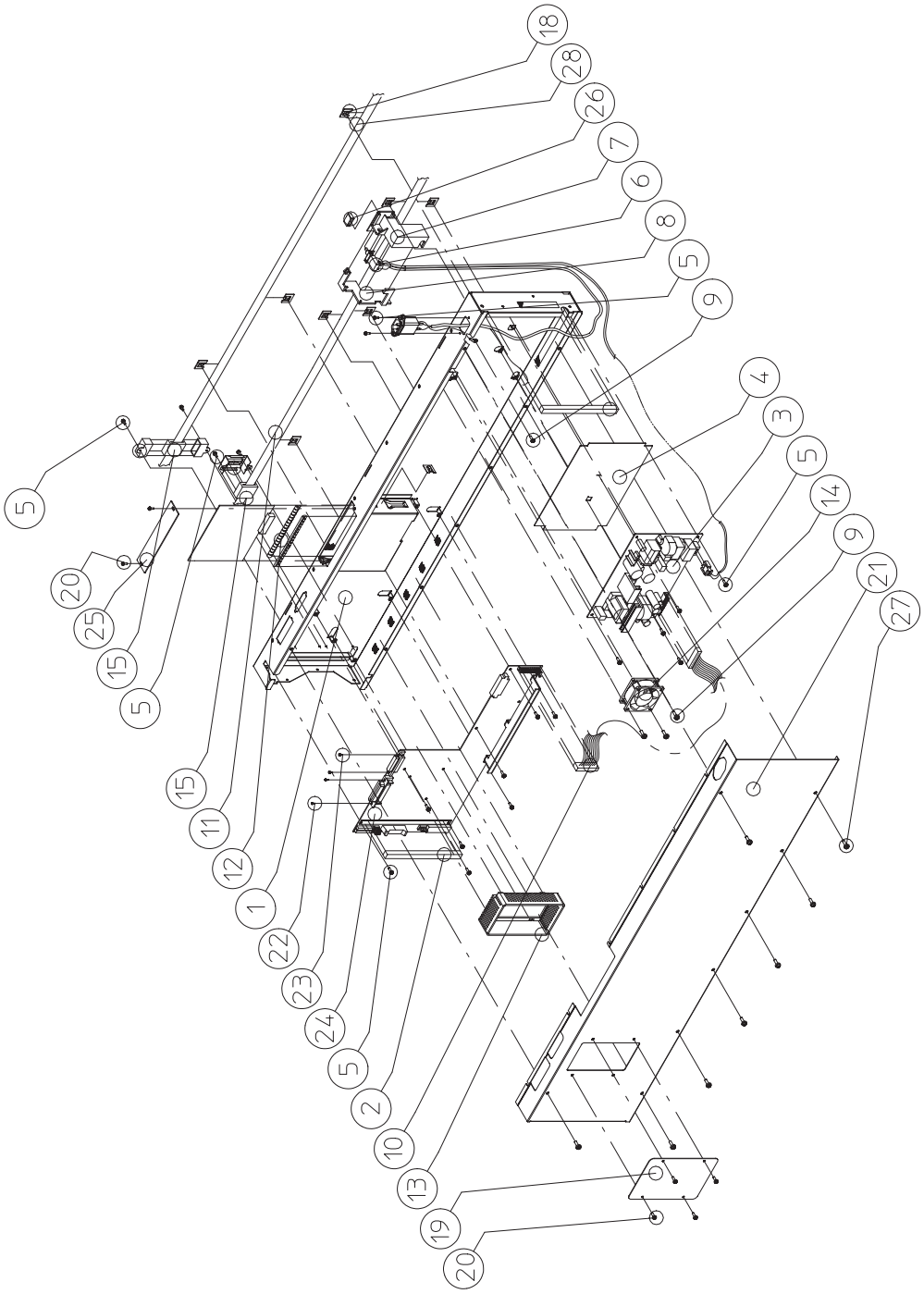
* - The Unicover Assembly is only applicable to units that have the Unicover Assembly installed already. If the Unit has the Center Cover and the Electrical Cover Assembly installed, then the Unicover Assembly should **NOT** be installed. When the Unicover Assembly is installed, it is **NOT** necessary to install the Center Cover, the Electrical Cover Assembly, SIMM Barrier or the SIMM Cover, since these parts are incorporated in the Unicover Assembly. Note that the Unicover is Plastic and the other parts are Metallic, so this is a way to distinguish the different parts.



Window and Back Cover Assemblies

Electronics Enclosure

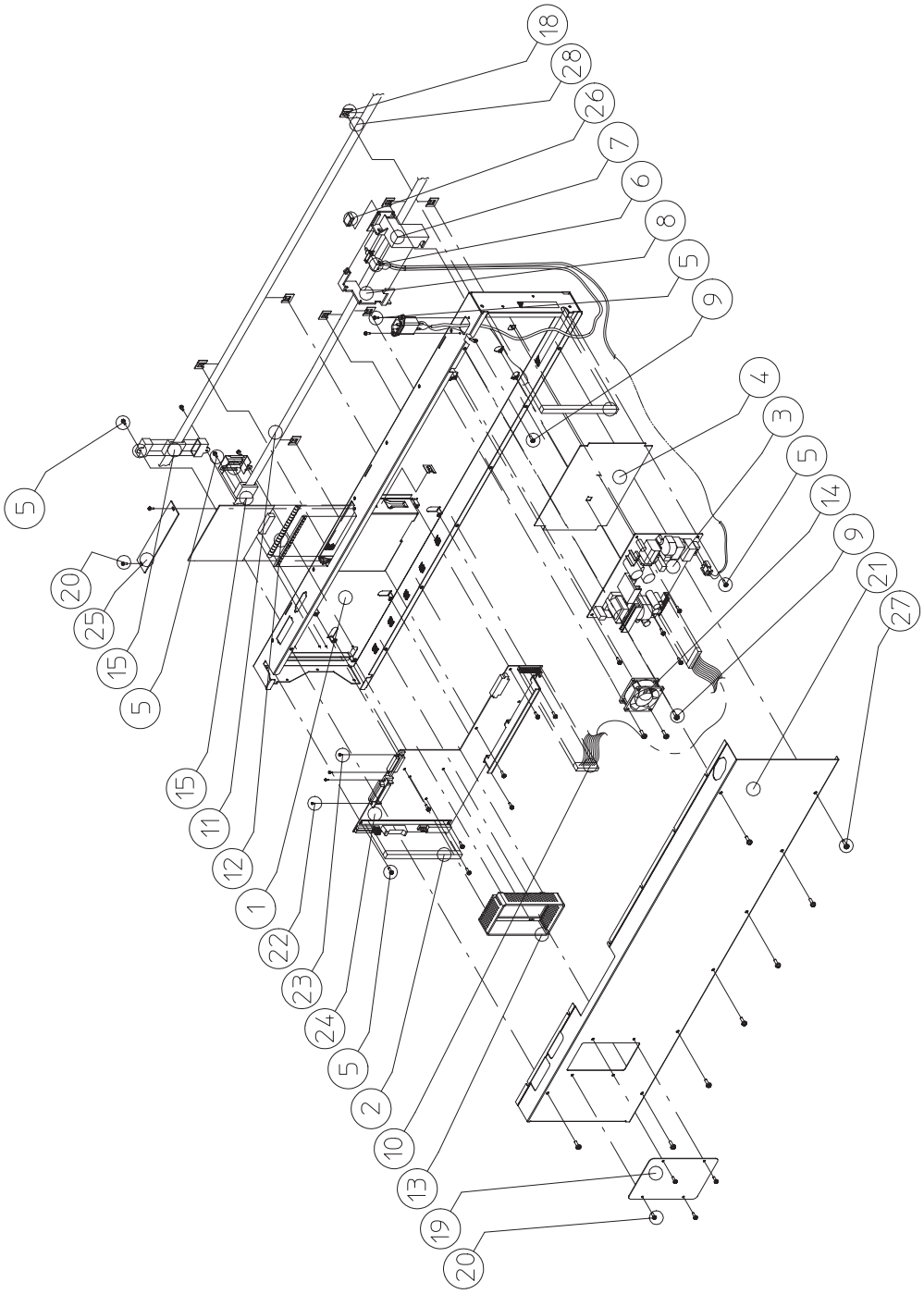
Reference on Drawing	HP Part Number	Quantity	Description
■ 1	C4705-60092	1	Electronics Enclosure Assembly (D/A1-size)
■	C4706-60092	1	Electronics Enclosure Assembly (E/A0-size)
■ 2	Deleted		
3	0950-2623	1	Power Supply
4	C3190-00016	1	Power Supply Insulator
5	0515-2200	-	Screw
6	C3195-60149	1	Wiring Harness
7	C3180-40012	1	Switch Mount
8	C3195-40047	1	Switch Mount Cap
9	0515-2282	-	Grounding Screw
10	C3195-60056	1	Power Cable (D/A1-size)
	C3196-60056	1	Power Cable (E/A0-size)
11	C3195-60057	1	Cable Assembly (D/A1-size)
	C3196-60057	1	Cable Assembly (E/A0-size)
12	8160-0770	1	MIO Shield
■ 13	C4704-40050	1	SIMM Barrier (included with Unicover)
14	C3190-60137	1	Fan Assembly
15	9170-1618	1	Ferrite
16	Deleted		
17	Deleted		
18	1400-1021	1	Cable Clip
■ 19	C3195-00009	1	SIMM Cover (included with Unicover)



Electronics Enclosure

Electronics Enclosure (Continued)

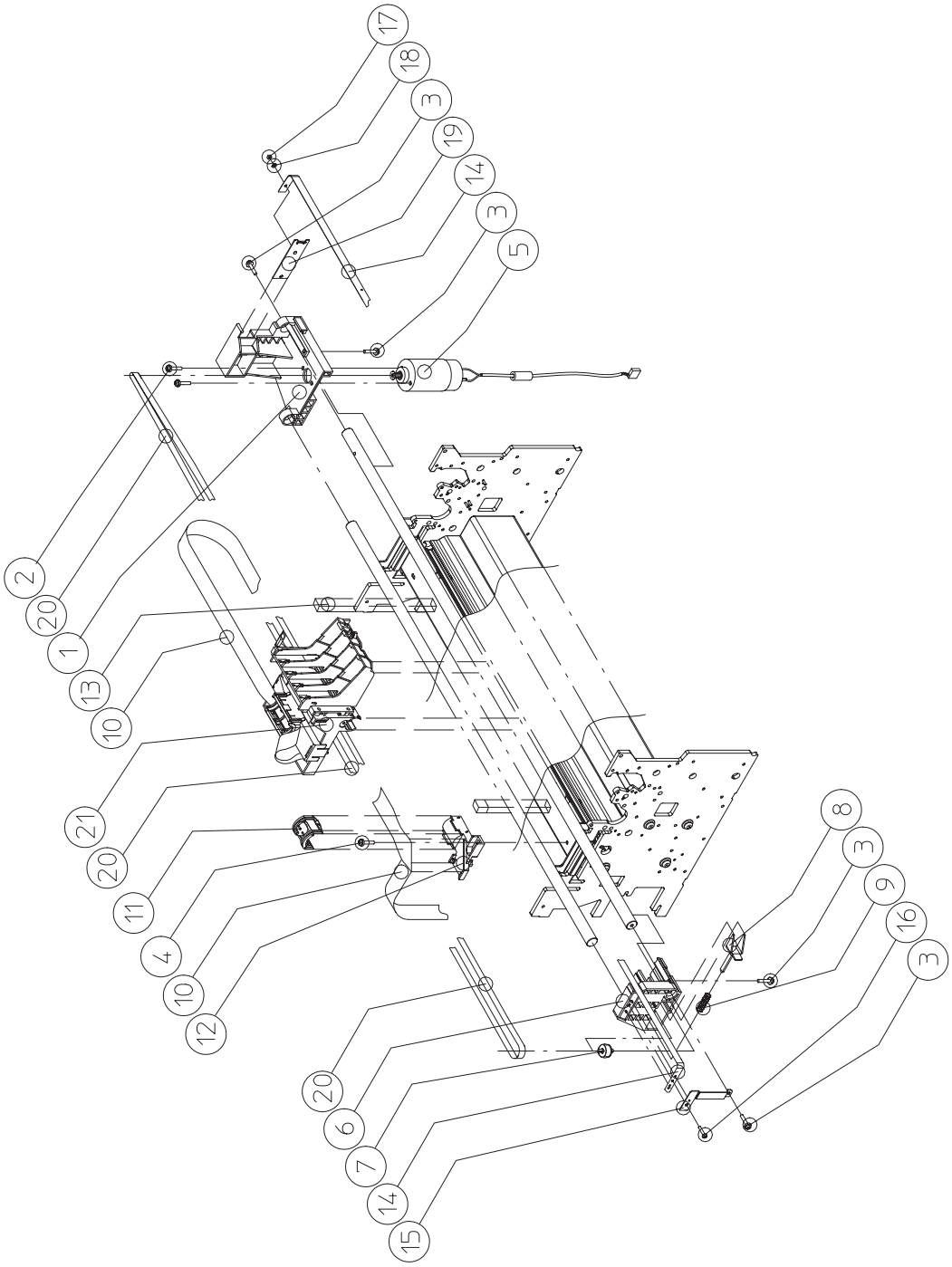
Reference on Drawing	HP Part Number	Quantity	Description
20	0515-2246	1	Screw
21	C3195-60053	1	Electrical Cover Assembly (D/A1-size)
	C3196-60053	1	Electrical Cover Assembly (E/A0-size)
	C4705-60088	1	Unicover Assembly (D/A1-size) * see page 11-4
	C4706-60088	1	Unicover Assembly (E/A0-size) * see page 11-4
22	0515-1084	1	Screw
23	0570-1316	1	Screw
24	C4705-60001	1	Main PCA (New) (HP DesignJet 700)
	C4705-69001	1	Main PCA (Rebuilt) (HP DesignJet 700)
	C4708-60001	1	Main PCA (New) (HP DesignJet 750C Plus/755CM)
	C4708-69001	1	Main PCA (Rebuilt) (HP DesignJet 750C Plus/755CM)
	C3195-69101	1	Main PCA (HP DesignJet 750C)
25	C1633-00031	1	MIO Cover (When MIO Card not Installed)
	J2551-61015	1	MIO Card (When MIO Cover not Installed)
26	5041-1203	1	Switch Button
27	0515-0382	1	Screw
-	C4705-60111	1	Code SIMM (HP DesignJet 700)
-	C3195-60151	1	Code SIMM (HP DesignJet 750C)
-	C4708-60111	1	Code SIMM (HP DesignJet 750C Plus/755CM)
-	C3198-60151	1	Postscript SIMM
-	5961-3524	1	Serial Number
28	C3195-80009	1	Trailing Cable



Electronics Enclosure

Carriage-Axis

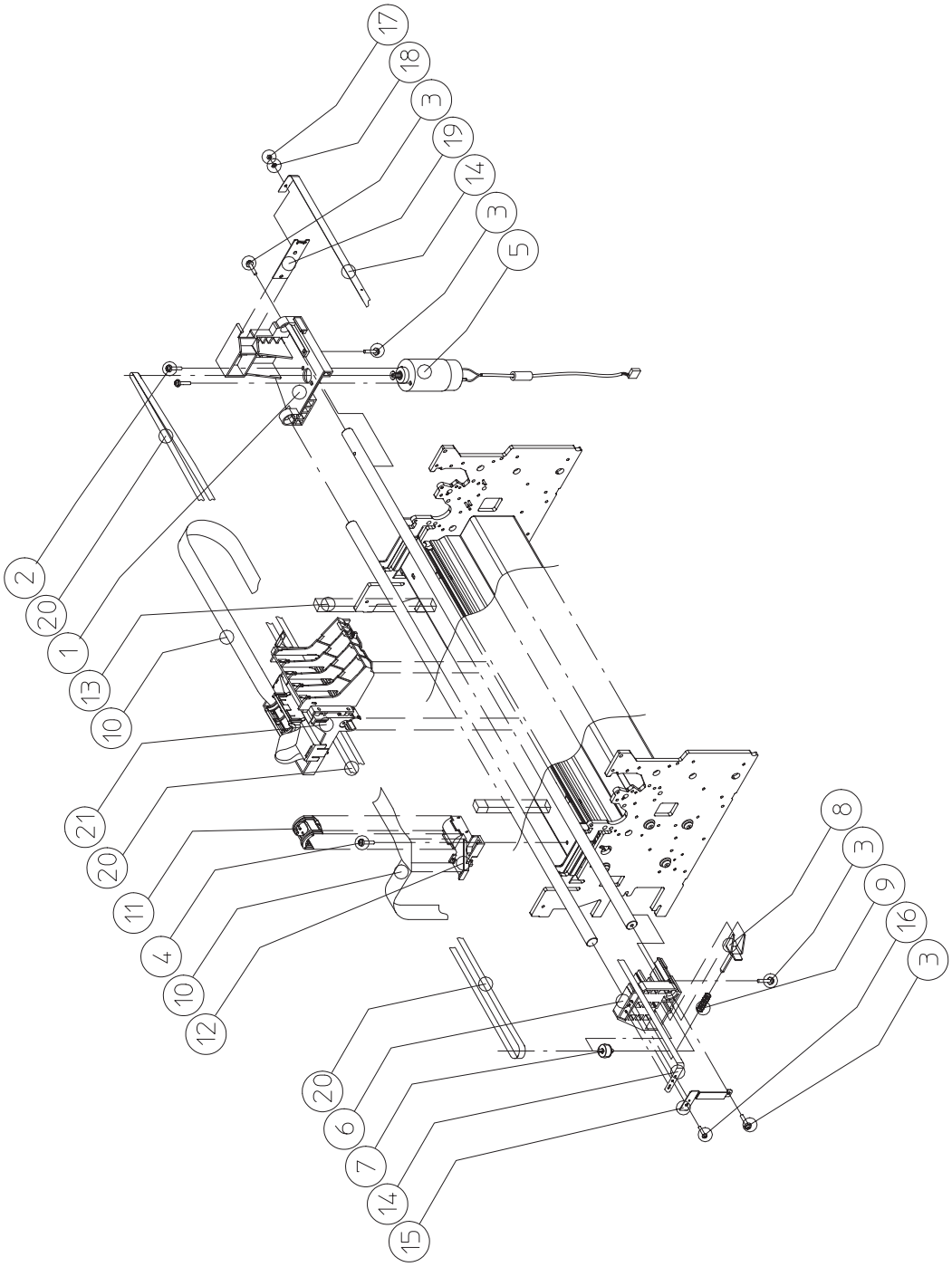
Reference on Drawing	HP Part Number	Quantity	Description
1	C3195-40017	1	Right Bracket
2	0515-0382	1	Screw
3	0515-2521	1	Screw
4	0515-2248	1	Screw
5	C3195-60112	1	Y-axis Motor
6	C3195-40014	1	Left Bracket
■ 7	C3195-60169	1	Pulley Assembly
8	C3195-40039	1	Wedge Tensioner
9	C3195-80002	1	Spring
10	C3195-80009	1	Trailing Cable
11	C3195-40024	1	Trailing Cable Clip
12	C3195-40025	1	Trailing Cable Bracket
13	C3195-40053	1	Bridge Foam
■ 14	C4713-60098	1	Encoder Strip Assy (D/A1-size) (Includes Item 19)
■	C4714-60098	1	Encoder Strip Assy (E/A0-size) (Includes Item 19)



Carriage-Axis

Carriage-Axis (Continued)

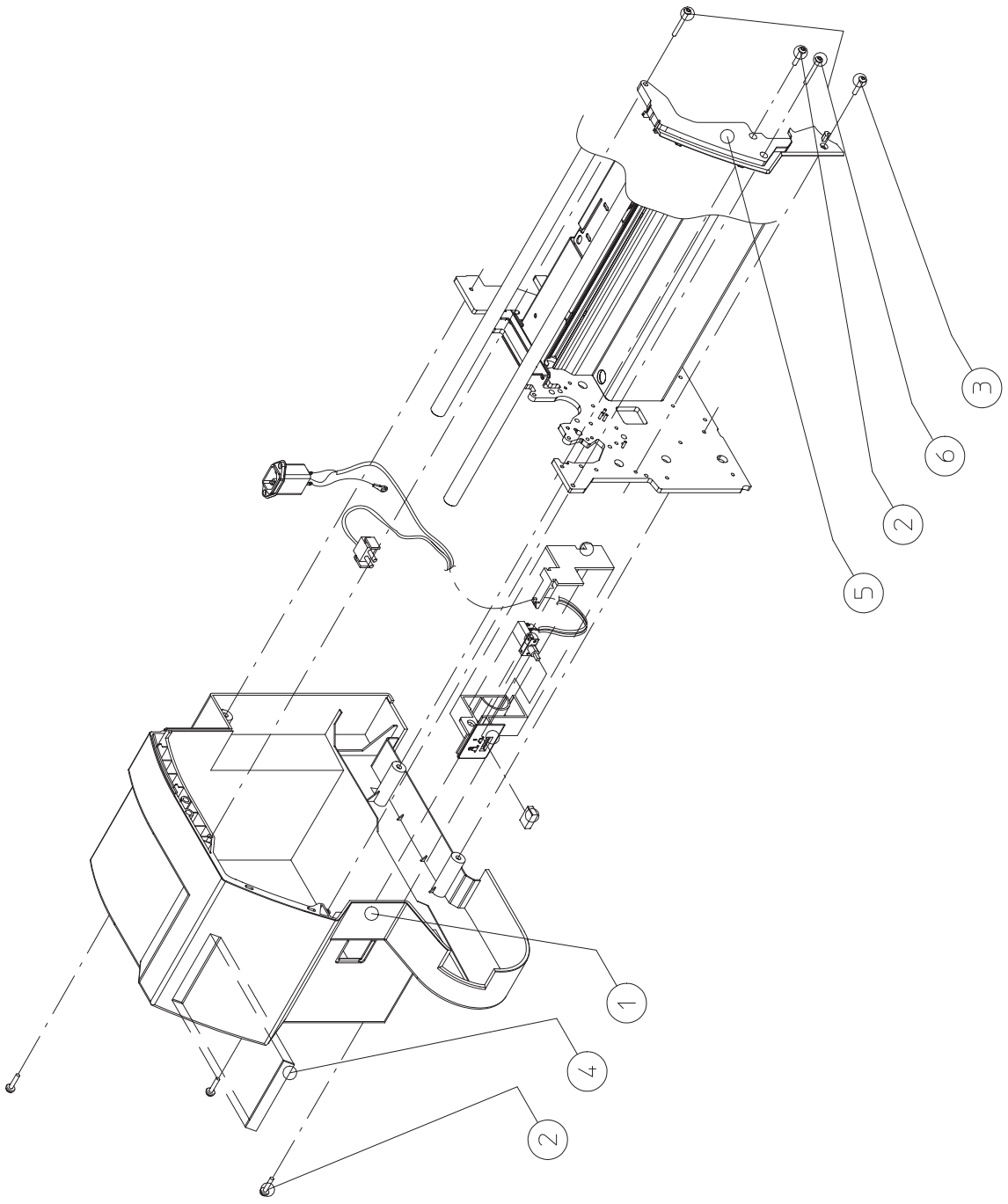
Reference on Drawing	HP Part Number	Quantity	Description
15	C3195-00013	1	Ground Bracket
16	0624-0704	1	Screw
17	0535-0031	1	Nut
18	3050-0026	1	Flat Washer
19	C4699-00016	1	Spring
20	C4705-60082	1	Carriage Belt (D/A1-size)
	C4706-60082	1	Carriage Belt (E/A0-size)
21	C4705-60054	1	Carriage Assembly (HP DesignJet 700)
	C3195-60143	1	Carriage Assembly (HP DesignJet 750C/750C Plus/755CM)
-	C3195-40066	1	Fan Deflector (Only applicable to the E-size Printers) **For Information regarding this part, refer to Service Note: C3196A-05 or C3198A-03**



Carriage-Axis

Left End-Cover and Trim

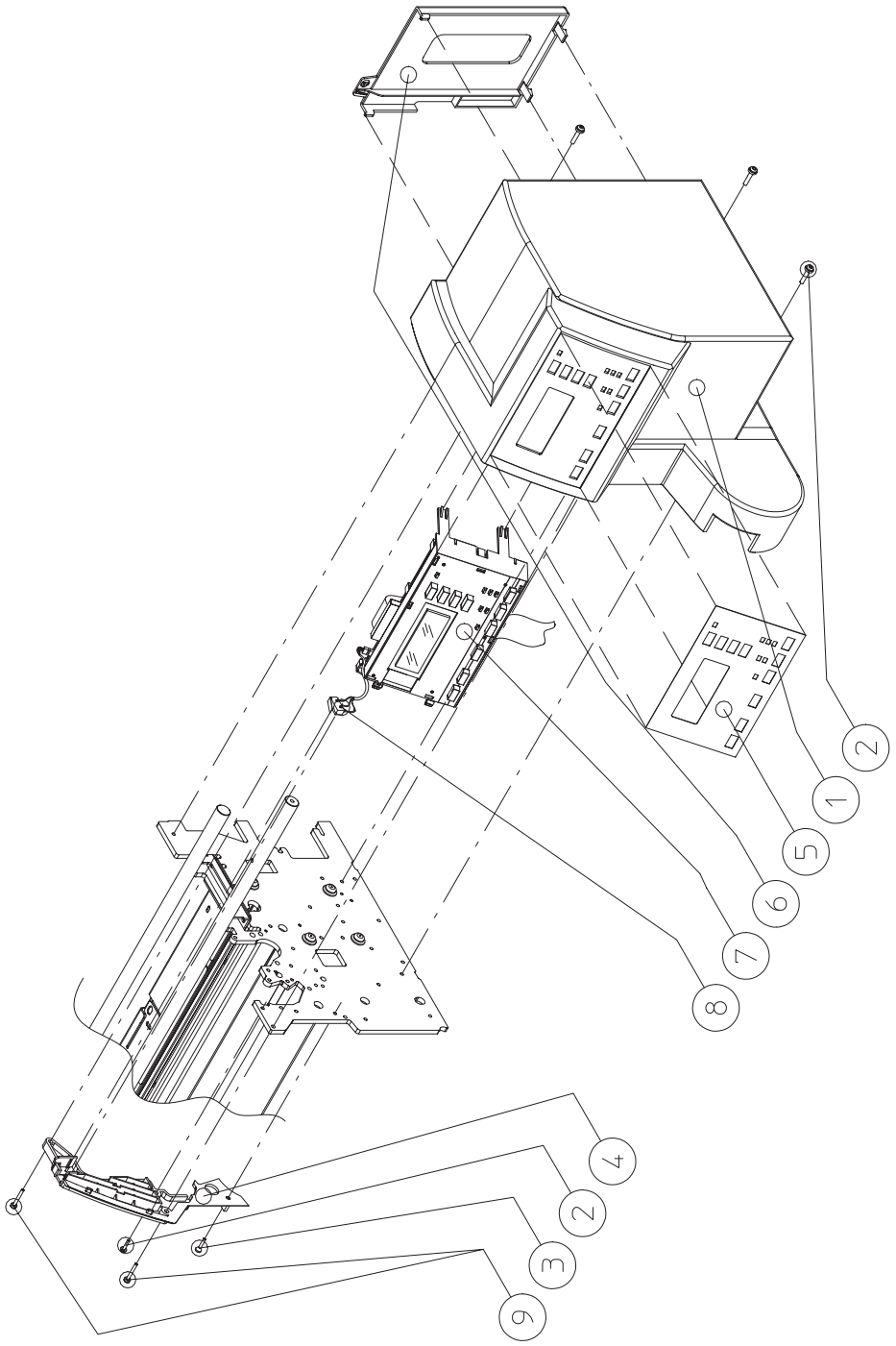
Reference on Drawing	HP Part Number	Quantity	Description
1	C3195-40007	1	Left End-Cover
2	0515-2337	1	Screw
3	0515-2250	1	Screw
■ 4	C4705-00020	1	Nameplate (HP DesignJet 700)
	C3195-00019	1	Nameplate (HP DesignJet 750C)
■	C4708-00020	1	Nameplate (HP DesignJet 750C "MFP")
■	C3198-00020	1	Nameplate (HP DesignJet 755CM)
5	C3195-40029	1	Left Trim
6	0624-0771	1	Screw



Left End-Cover and Trim

Right End-Cover and Trim

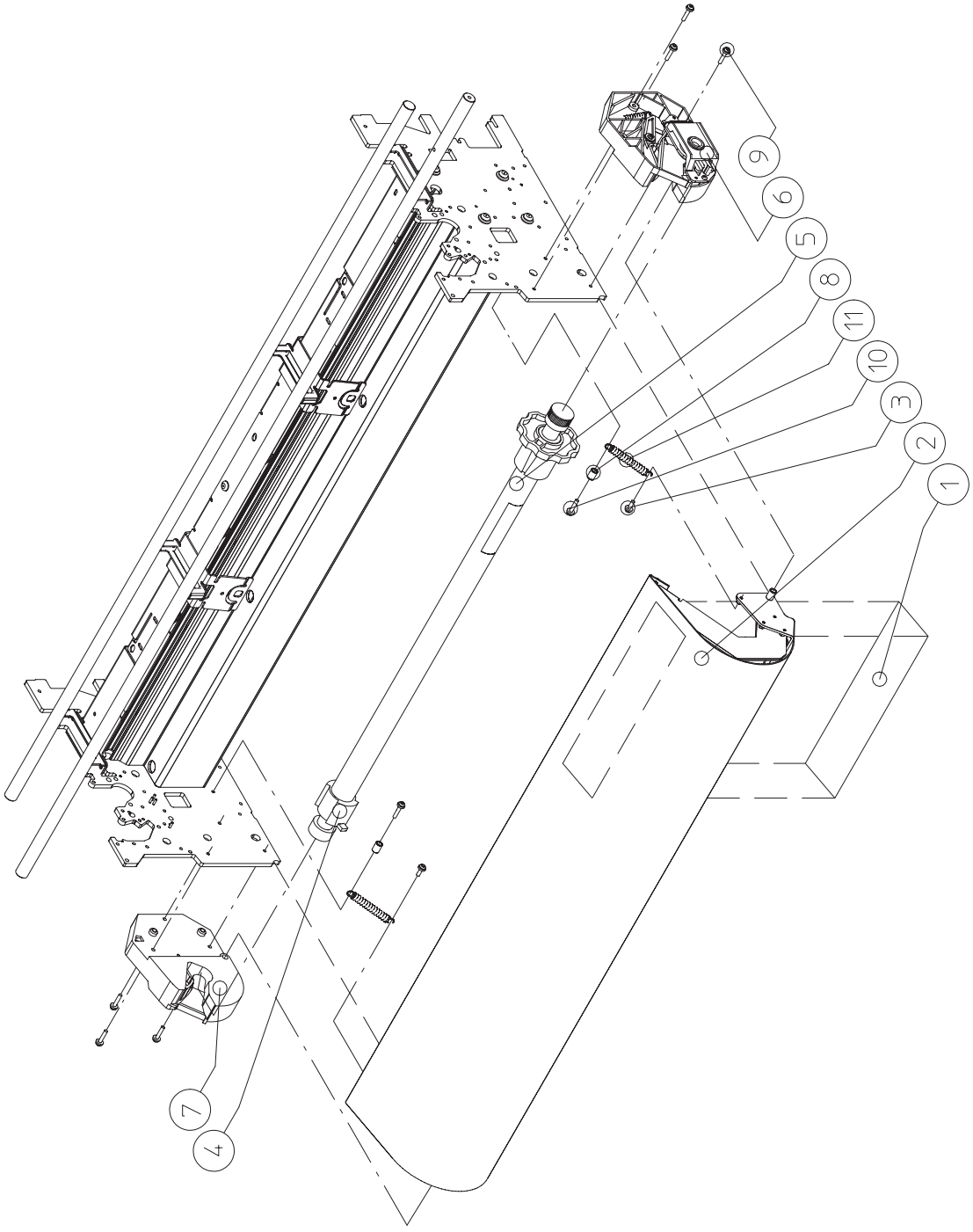
Reference on Drawing	HP Part Number	Quantity	Description
1	C3195-40006	1	Right End-Cover
2	0515-2337	1	Screw
3	0515-2250	1	Screw
4	C3195-40030	1	Right Trim
5	See Page 11-35	1	Front-Panel Overlay
6	C4705-60085	1	QRG Holder
7	C3195-60038	1	Front-Panel Assembly
8	C3195-60015	1	Window Sensor Assembly
9	0624-0771	1	Screw



Right End-Cover and Trim

Roll-Feed Components

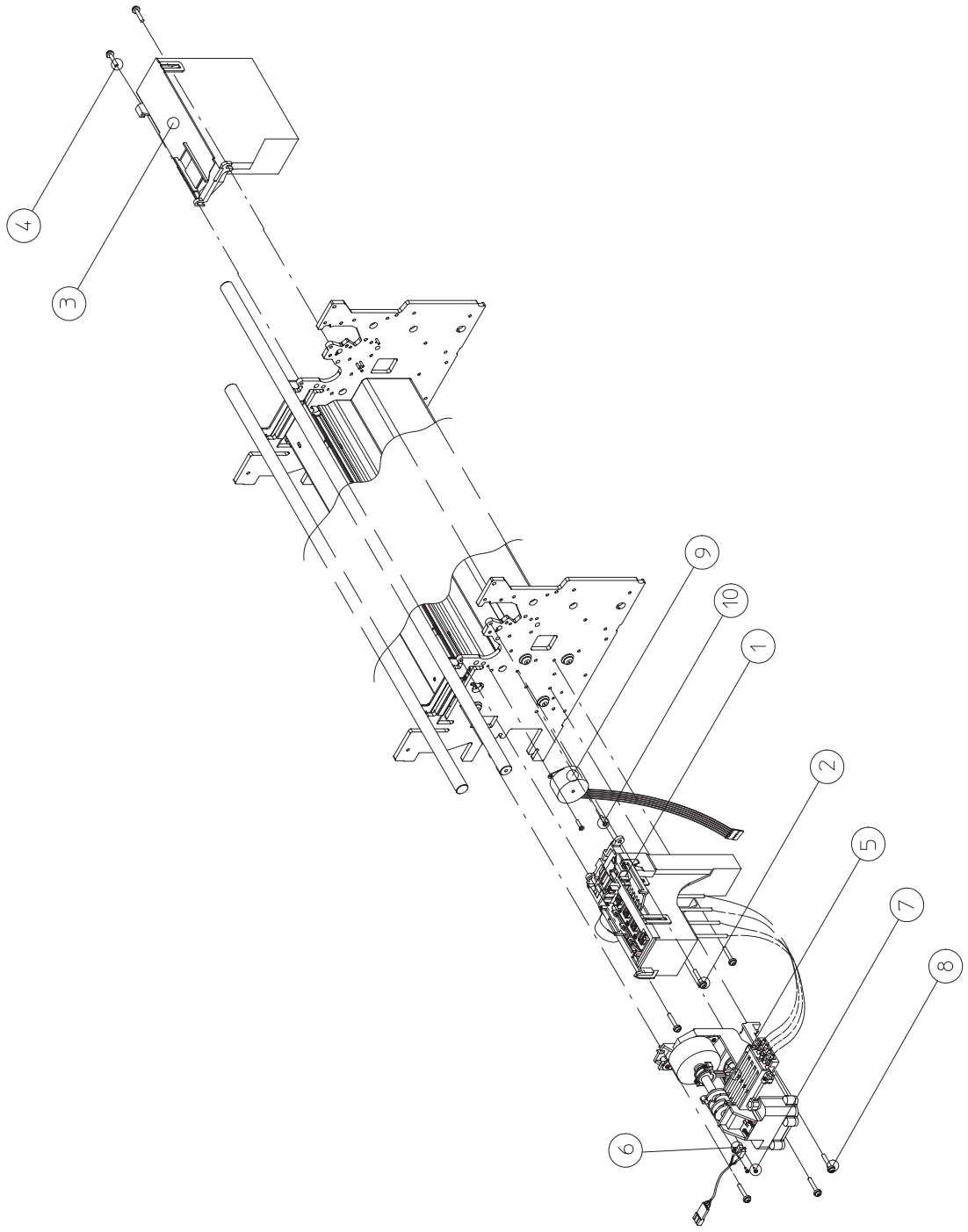
Reference on Drawing	HP Part Number	Quantity	Description
1	C1633-00084	1	Label
2	C4705-60084	1	Roll-Feed Cover Assembly (D/A1-size)
	C4706-60084	1	Roll-Feed Cover Assembly (E/A0-size)
3	0515-2253	2	Screw
4	C2858-40043	1	Spindle Spacer
5	C2847-60093	1	Spindle Assembly (D/A1-size)
	C2848-60011	1	Spindle Assembly (E/A0-size)
	C3172-60003	1	Spindle Assembly (D/A1-size) (Available only for China)
	C3173-60003	1	Spindle Assembly (E/A0-size) (Available only for China)
6	C4704-60199	1	Right Roll-Feed Module
7	C4704-60082	1	Left Roll-Feed Module
8	0380-3073	1	Spacer
9	0515-2248	1	Screw
10	C2847-20017	1	Screw
11	-	1	Roll-Feed Cover Spring (D/A1-size) (Included in Item 2)
	-	1	Roll-Feed Cover Spring (E/A0-size) (Included in Item 2)



Roll-Feed Components

Service Station and Primer Assembly

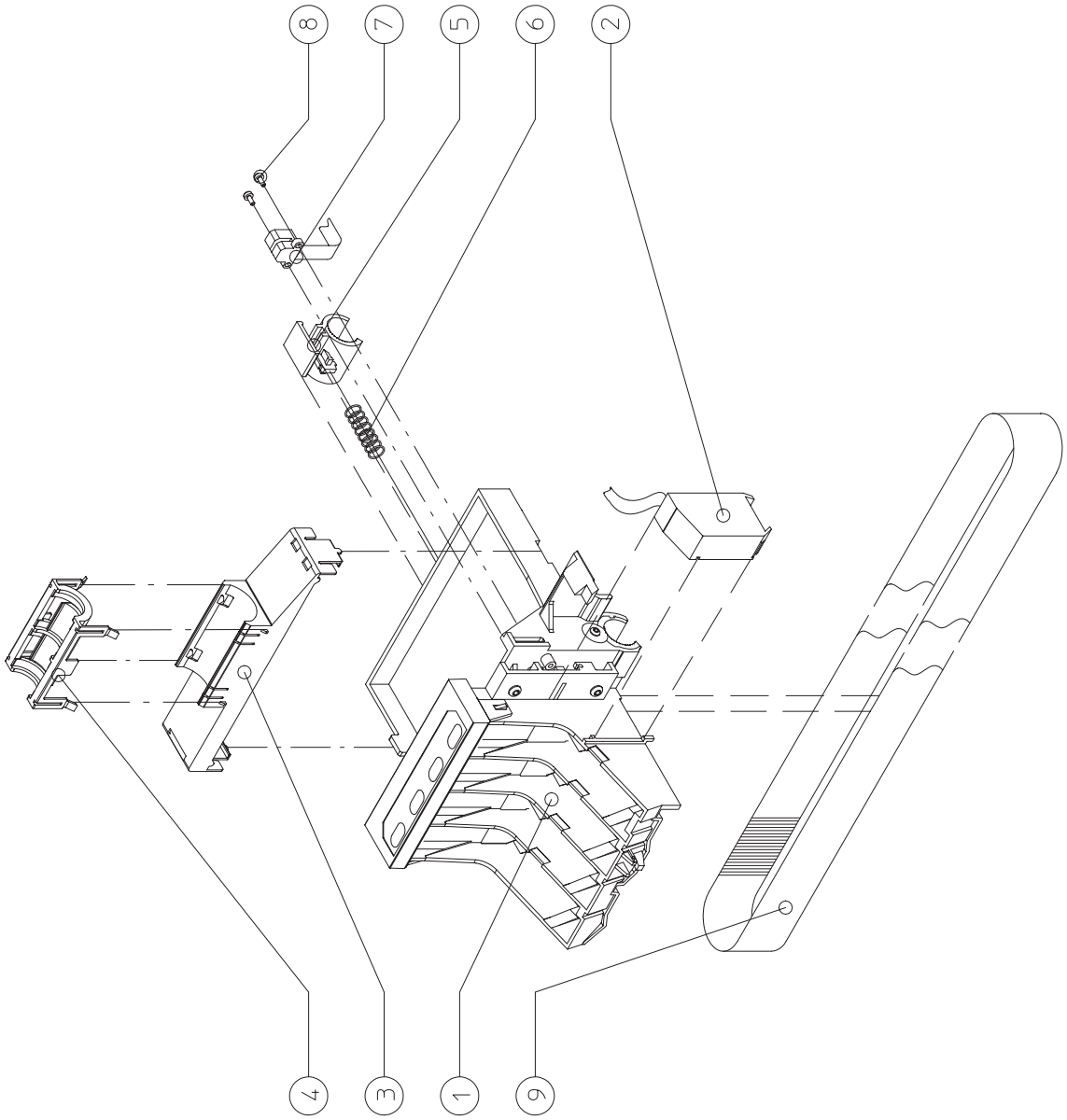
Reference on Drawing	HP Part Number	Quantity	Description
1	C3195-60165	1	Service Station Assembly
2	0515-2282	1	Screw
3	C3195-60027	1	Spittoon Assembly
4	0515-2282	1	Screw
5	C3195-60059	1	Primer Assembly
6	C2858-60007	1	Primer Sensor Assembly
7	0624-0647	1	Screw
8	0515-1743	1	Screw
9	C3195-60009	1	Bail Stepper Assembly
10	0515-2299	1	Screw



Service Station and Primer Assembly

Carriage Assembly

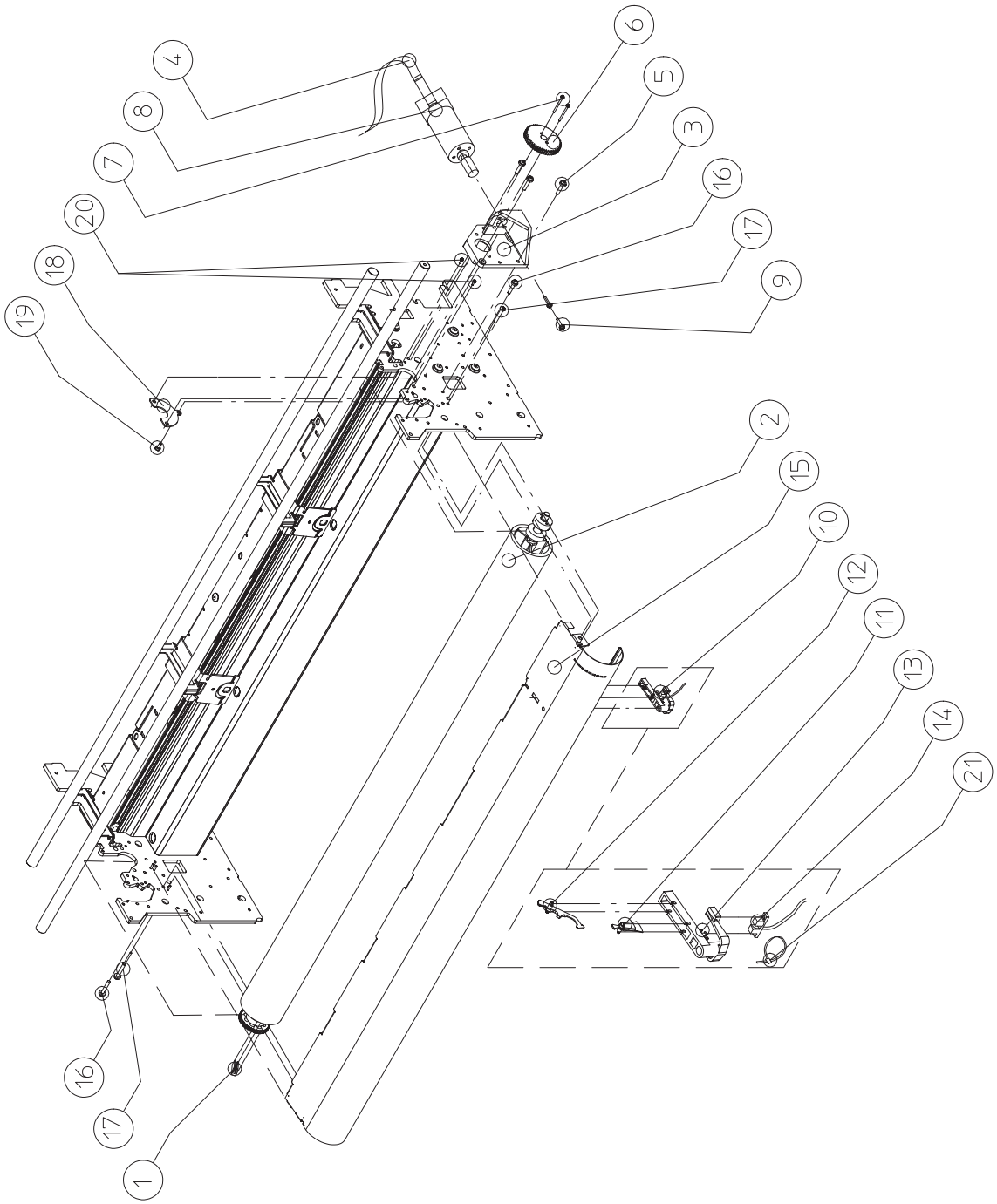
Reference on Drawing	HP Part Number	Quantity	Description
■ 1	C4705-60054	1	Carriage Assembly (HP DesignJet 700)
	C3195-60143	1	Carriage Assembly (HP DesignJet 750C/750C Plus/755CM)
■ 2	Deleted		
3	C3195-40027	1	Clamp
4	C3195-40026	1	Clamp
5	C3195-40064	1	Rear Bushing
6	C1633-80014	1	Carriage Spring
7	C2858-60010	1	IC Encoder Assembly
8	0624-0680	1	Screw
■ 9	C4705-60082	1	Carriage Belt (D/A1-size)
■	C4706-60082	1	Carriage Belt (E/A0-size)
-	C4705-40001	1	Cartridge Cover (HP DesignJet 700 Only)



Carriage Assembly

Media Entry Path

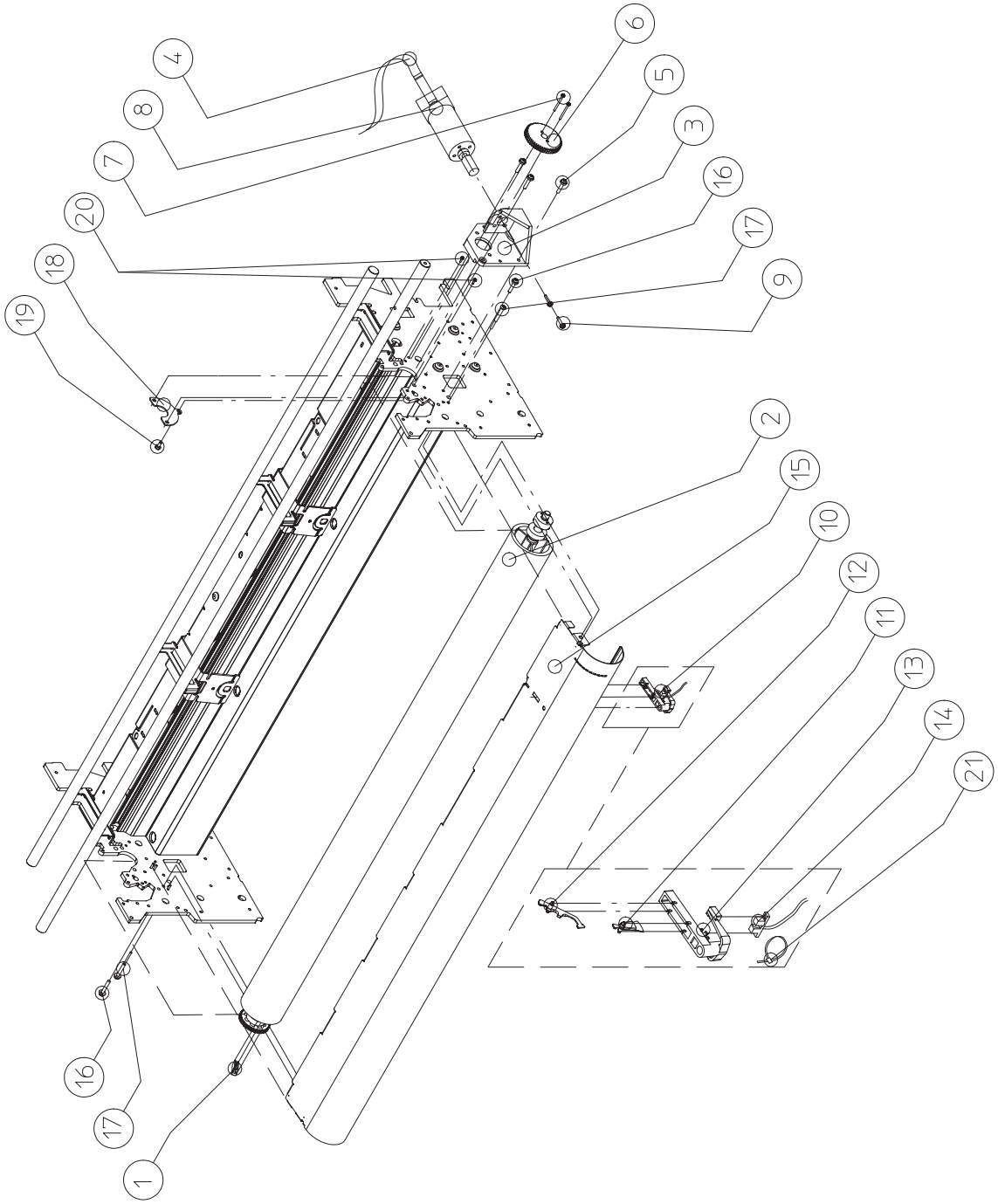
Reference on Drawing	HP Part Number	Quantity	Description
■ 1	-	1	Mark Encoder (Included in Item 2)
2	C4699-60042	1	Drive Roller (D/A1-size)
	C4700-60042	1	Drive Roller (E/A0-size)
■ 3	-	1	Media-Motor Mount (Included in Item 8)
4	C3195-60102	1	Encoder Cable
5	0515-2248	1	Screw
6	-	1	Helical Gear (Included with Media Motor Assembly)
7	0515-1349	1	Screw
■ 8	C4705-60068	1	X-axis Motor Assembly (Includes Item 3)
9	0515-0382	1	Screw
10	C3190-60140	1	Media Sensor Assembly
11	-	1	Edge Measuring Lever (Included in Item 10)
12	-	1	Secondary Lever (Included in Item 10)
13	-	1	Media Sensor Holder (Included in Item 10)



Media Entry Path

Media Entry Path (Continued)

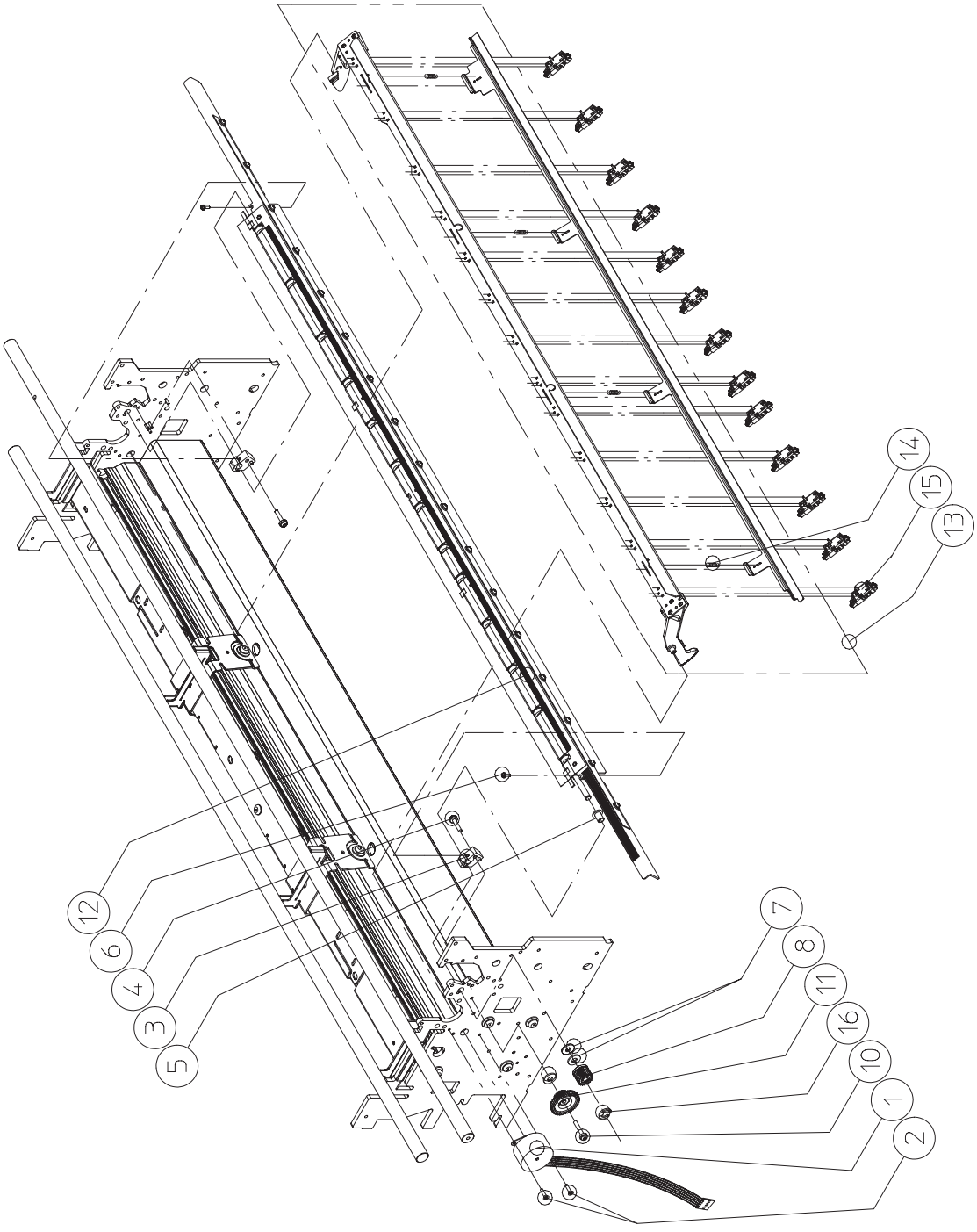
Reference on Drawing	HP Part Number	Quantity	Description
14	-	1	Media Sensor (Included in Item 10)
15	C3195-60173	1	Entry Platen Assembly (D/A1-size)
	C3196-60173	1	Entry Platen Assembly (E/A0-size)
16	0515-1743	1	Screw
17	0515-2337	1	Screw
18	C1633-00009	1	Axial Bias Plate
19	0515-2278	1	Screw
20	0515-0382	1	Screw
21	1400-0577	1	Cable Tie



Media Entry Path

Bail and Overdrive

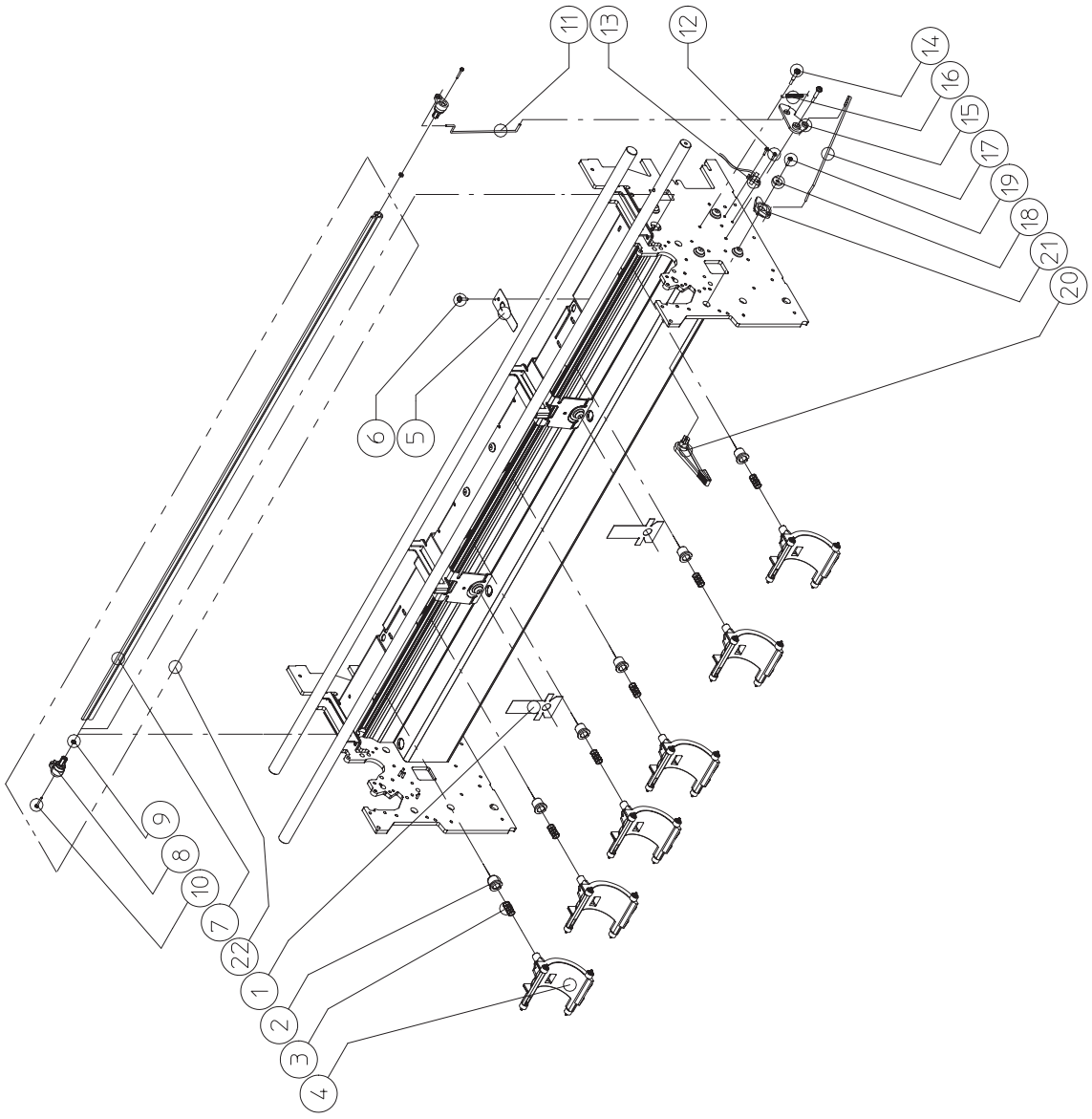
Reference on Drawing	HP Part Number	Quantity	Description
1	C3195-60009	1	Bail Stepper Assembly
2	0515-2299	1	Screw
3	C1633-40089	1	Mount Block
4	0515-1743	1	Screw
5	1410-0708	1	Bearing Sleeve
6	0515-2246	1	Screw
7	3050-1381	1	Washer
8	C1633-60030	1	Overdrive Gear Assembly
9	Deleted		
10	C2847-20017	1	Screw
11	C1633-40019	1	Cluster Gear
12	C3195-60148	1	Overdrive Assembly (D/A1-size)
	C3196-60148	1	Overdrive Assembly (E/A0-size)
13	C3195-60118	1	Bail Assembly (D/A1-size)
	C3196-60118	1	Bail Assembly (E/A0-size)
14	C2858-80002	1	Spring
■ 15	C4699-60045	1	Starwheel Assembly
16	0510-0083	1	Retainer Ring



Bail and Overdrive

Pinch-Arm Assembly

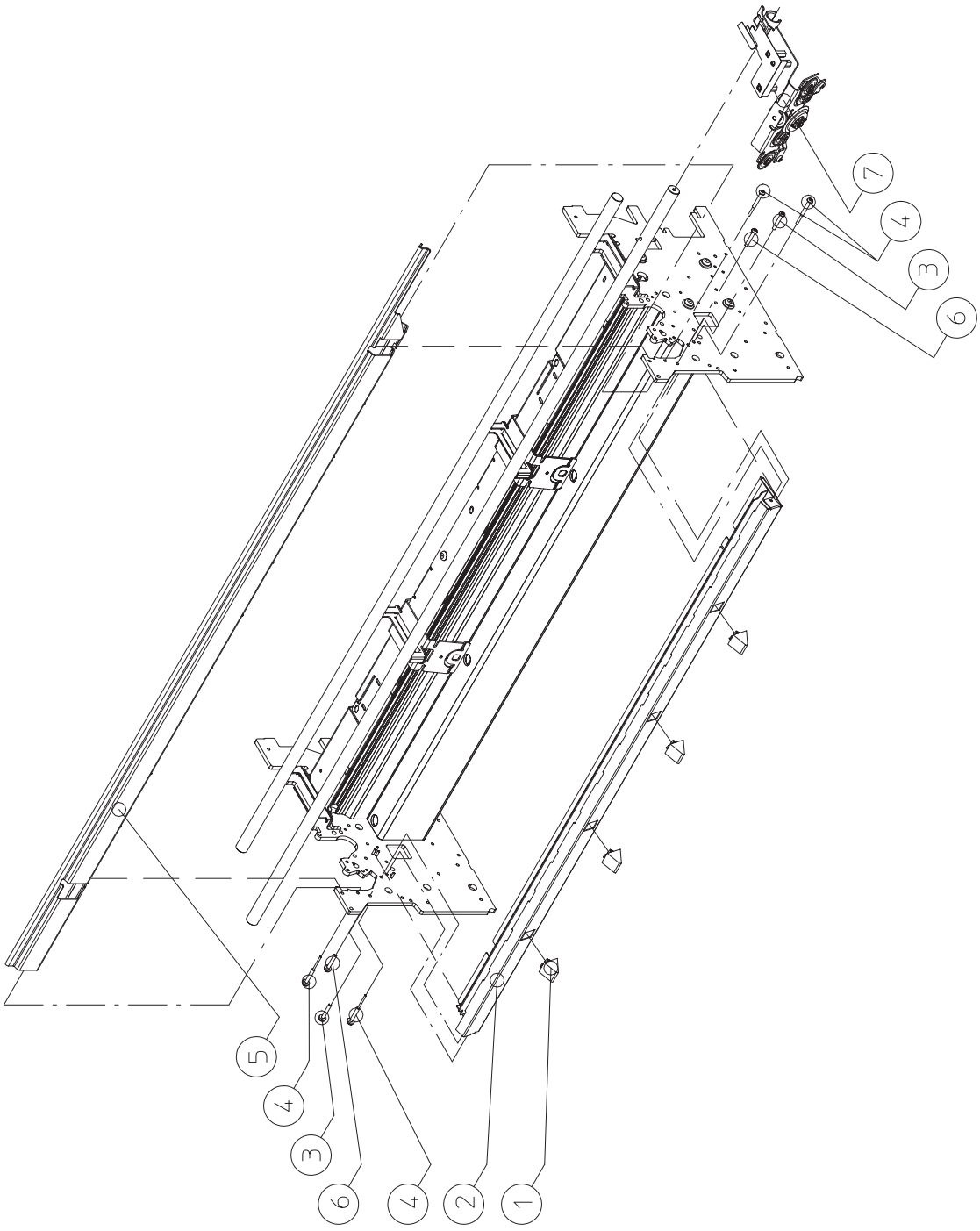
Reference on Drawing	HP Part Number	Quantity	Description
1	C1633-00059	1	Media Diverter
2	C1633-40082	1	Pinch-Arm Bushing
3	C1633-80005	1	Pinch-Arm Spring
4	C4705-60091	1	Pinch-Arm Assembly
5	C1633-00100	1	Edge Director
6	0515-0382	1	Screw
7	C2847-20005	1	Pinch-Arm Bar Cam (D/A1-size)
	C1633-20012	1	Pinch-Arm Bar Cam (E/A0-size)
8	-	2	Cam Journal (Included in Item 22)
9	-	2	Nut (Included in Item 22)
10	-	2	Screw (Included in Item 22)
11	-	1	Rear Wire Linkage (Included in Item 22)
12	-	2	Screw (Included in Item 22)
13	-	1	Pinch-Arm Sensor (Included in Item 22)
14	-	3	Shoulder Screw (Included in Item 22)
15	-	1	Rocker Plate (Included in Item 22)
16	-	1	Spring (Included in Item 22)
17	-	1	Front Wire Linkage (Included in Item 22)
18	-	1	Flat Washer (Included in Item 22)
19	-	1	Screw (Included in Item 22)
20	-	1	Pinch-Arm Lever (Included in Item 22)
21	-	1	Cam Drive (Included in Item 22)
22	C3195-60116	1	Pinch-Arm Lift Assembly



Pinch-Arm Assembly

Stardguard Assembly

Reference on Drawing	HP Part Number	Quantity	Description
1	C3195-40045	4	Media Guide
2	C3195-60029	1	Cutter Enclosure Assembly (D/A1-size)
	C3196-60029	1	Cutter Enclosure Assembly (E/A0-size)
3	0515-1743	1	Screw
4	0515-2337	1	Screw
5	C2847-60009	1	Stardguard Assembly (D/A1-size)
	C1633-60032	1	Stardguard Assembly (E/A0-size)
6	0515-2248	1	Screw
7	C2858-60021	1	Cutter Assembly



Stardguard Assembly

Description	HP Part Number	
	DesignJet 700/750C/750C Plus/755CM	
Repackaging Kit	D/A1 Size: C3195-60113	E/A0 Size: C3196-60113

User Documentation	**DesignJet 700/ 750C Plus**	**DesignJet 750C**
Chinese	C4705-60030	C3195-60070
English	C4705-60021	C3195-60061
French	C4705-60025	C3195-60065
German	C4705-60024	C3195-60064
Italian	C4705-60027	C3195-60067
Japanese	C4705-60028	C3195-60068
Korean	C4705-60022	C3195-60062
Portuguese	C4705-60029	C3195-60069
Spanish	C4705-60026	C3195-60066
Taiwanese	C4705-60023	C3195-60063

User Documentation	**DesignJet 755CM (Model A)**	**DesignJet 755CM (Model B)**
Chinese	-	C3198-60060
English	C3198-60001	C3198-60051
French	C3198-60005	C3198-60055
German	C3198-60004	C3198-60054
Italian	C3198-60007	C3198-60057
Japanese	-	-
Korean	-	C3198-60052
Portuguese	C3198-60009	C3198-60059
Spanish	C3198-60006	C3198-60056
Taiwanese	-	-

Description	HP Part Number	
Front-Panel Overlay	**DesignJet 700**	**DesignJet 750C/ 750C Plus/755CM**
Chinese	C4705-60040	C3195-60050
English	C4705-60031	C3195-60041
French	C4705-60035	C3195-60045
German	C4705-60034	C3195-60044
Italian	C4705-60037	C3195-60047
Japanese	C4705-60038	C3195-60048
Korean	C4705-60032	C3195-60042
Portuguese	C4705-60039	C3195-60049
Spanish	C4705-60036	C3195-60046
Taiwanese	C4705-60033	C3195-60043

Other Documentation

	DesignJet 700/ 750C/750C Plus/	DesignJet 755CM
Software Application Notes	C4705-90006	C3195-90121

	DesignJet 700/750C/750C Plus/755CM
HP-GL/2 and HP RTL Reference Guide	5959-9733
HP-GL/2 and HP RTL Peripherals Product Comparison Guide	5959-9734
Supplies Source (booklet)	5963-5162E
Media Reference Guide	5963-5220 / 5963-5224

Description	HP Part Number	
Print Cartridges	**DesignJet 700**	**DesignJet 750C/ 750C Plus/755CM**
Black	51645A	51645A
Cyan	–	51644C
Magenta	–	51644M
Yellow	–	51644Y
Plug-In Memory (DRAM SIMM)	**DesignJet 700/750C/750C Plus/755CM**	
4-Mbyte SIMM	C3132A	
8-Mbyte SIMM	C3133A	
16-Mbyte SIMM	C3146A or D2297A	
32-Mbyte SIMM	D3578A	
PostScript Upgrade Kit (ROM SIMM and driver)	**DesignJet 700/750C/750C Plus/755CM**	
	C4707A	
HP Color Management Kit	**DesignJet 700/750C/750C Plus/755CM**	
	C4698A	

Interface Cables

Parallel (Bi-Tronics/Centronics) Interface Cables

Computer	HP Part Number	Cable length	Connector type at computer end of cable
	DesignJet		
Applicable to all computers	C2950A	2.1 m (6.9 ft)	25-pin male
	C2951A	3.0 m (9.8 ft)	25-pin male

Serial (RS-232-C) Interface Cables

Computer	HP Part Number	Cable length	Connector type at computer end of cable
	DesignJet		
HP Vectra or HP 24541A/B serial interface card (9-pin connector). HP 9000 workstations using 9-pin connectors. IBM AT and compatible computers using 9-pin serial connectors.	24542G	3.0 m (9.8 ft)	9-pin female
HP Vectra PC with HP 24541A/B dual serial interface card using the 25-pin connector. HP Apollo workstation using an SPE (Serial/Parallel Expansion) option and supplied adapter cable. DEC VAX. Sun workstation.	13242G	5.0 m (16.4 ft)	25-pin male
IBM PC, PC/XT, IBM PS/2 and compatible computers	C2913A	1.2 m (3.9 ft)	25-pin female
	17255D	1.2 m (3.9 ft)	25-pin female
Apple Macintosh Plus, SE, II Series, Classic, LC family, Quadra family, PowerBook, PowerMac	17302A	1.5 m (4.9 ft)	8-pin male mini-DIN
Extension cable	31391A	5 m (16.4 ft)	25-pin female

Notes

12

Support Services

Hewlett-Packard support services in the United States

Below is a list of Hewlett-Packard support resources for customers in the United States. Use these resources before calling the Customer Support Center, whose details are given after this list.

US Support Resources			
Resource	**Support provided and notes**	**Phone/fax/ftp number**	**Hours of operation**
HP FIRST Fax	Detailed product support information on common software applications and troubleshooting tips. All sent by fax. Must call using a Group 3 fax machine.	(800) 333-1917 (Press 1 for HP FIRST) or (208) 344-4809	24 hours. 7 days. Automated support service.
HP Download Service (BBS: Bulletin Board Service)	Electronic downloading of HP product information, troubleshooting hints and updated HP plotter driver information.	(208) 344-1691	24 hours. 7 days. Real-time access over modem.
CompuServe (HP FORUM)	Interactive dialog with worldwide HP customer community for exchange of information. Must be a subscriber. Ask for Agent #51. CompuServe connect charges apply to caller.	(800) 524-3388	24 hours. 7 days. Real-time access over modem.
Internet	Information on products and plotter drivers for anyone with ftp access to the Internet, or who has Worldwide Web access through a hyper-media viewer such as Mosaic.	ftp to: 192.6.71.2, or ftp–boi.external.hp.com Name: anonymous Password: your e-mail address World-Wide Web: http://www-dmo.external.hp.com/peripherals/main.html	24 hours. 7 days. Real-time access over modem.
Drivers by mail	HP distributes HP-GL/2 plotter drivers for AutoCAD and Microsoft Windows. Other plotter drivers must be obtained by contacting the software application manufacturer.	(970) 339-7009	24 hours. 6 days (closed Sundays).

US Customer Support Center			
Resource	**Support provided**	**Phone number**	**Hours of operation**
HP Customer Support Center	Technical support with setup, operation and repair information.	(208) 323-2551	6am – 6pm (MST) Weekdays

Other Useful HP Resources in the United States			
Resource	**Support provided and notes**	**Phone number**	**Hours of operation**
HP Customer Information Center	Pre-sales information and literature	(800) 752-0900	6 am – 5 pm (PST) Weekdays
Services Direct Marketing	HP service contract information	(800) 835 4747	730 am – 12 noon 1pm – 4 pm (PST) Weekdays
HP DIRECT Ordering	Ordering of supplies and accessories directly from HP.	(800) 538-8787	6am – 5pm (PST)
Parts Identification	Assistance in identifying service parts.	(916) 783-0804	M Tu W Th: 6am – 3pm (MST) Friday: 6am – 2pm (MST)
Support Materials Organization	Ordering of manuals and service parts directly from HP. Must have a part number before calling.	(800) 227-8164	M Tu Th F: 6am – 5pm (PST) Wednesday: 6am – 2pm 3pm – 5pm (PST)
HP Support Assistant (CD-ROM)	A quarterly CD-ROM subscription service from HP. This online system provides technical information, product information and software drivers. This product is designed to run in a Microsoft Windows environment.	(800) 457-1762	24 hours 7 days

Hewlett-Packard support services in Europe

Below is a list of Hewlett-Packard support resources for customers in Europe. Use these resources before calling the Customer Support Center, whose details are given after this list.

European Support Resources			
Resource	**Support provided and notes**	**Phone/fax/ftp number**	**Hours of operation**
HP FIRST Fax	Detailed product support information on common software applications and troubleshooting tips. All sent by fax. Must call using a Group 3 fax machine.	Europe: (English) (+31) 20 681 5792 Austria: (German) 0660 8128 Belgium: (Dutch) 0800 1 1906 (French) 0800 1 7043 Switzerland: (French) 155 1526 (German) 155 1527 Germany: (German) 0130 810061 Denmark: (Danish) 800 10453 Spain: (Spanish) 900 993123 France: (French) 05 905900 United KIngdom: (English) 0800 960271 Italy: (Italian) 1678 59020 Norway: (Norwegian) 800 11319 Netherlands: (Dutch) 06 0222420 Sweden: (Swedish) 020 795743 Finland: (Finnish) 9800 13134	24 hours. 7 days. Automated support service.
HP Download Service (BBS: Bulletin Board Service)	Electronic downloading of HP product information, troubleshooting hints and updated HP plotter driver information.	UK: (01344) 360880 Outside the UK: (+1) 208 344-1694	24 hours. 7 days. Real-time access over modem.

European Support Resources (continued)			
Resource	**Support provided and notes**	**Phone/fax/ftp number**	**Hours of operation**
CompuServe (HP FORUM)	Interactive dialog with worldwide HP customer community for exchange of information. Must be a subscriber. CompuServe connect charges apply to caller.	UK: (01272) 760680 and ask for Agent #51. Outside the UK: (+1) 614 529-1349	24 hours. 7 days. Real-time access over modem.
Internet	Information on products and plotter drivers for anyone with ftp access to the Internet, or who has Worldwide Web access through a hyper-media viewer such as Mosaic.	ftp to: 192.6.71.2, or ftp-boi.external.hp.com Name: anonymous Password: your e-mail address World-Wide Web: http://www-dmo.external.hp.com/peripherals/main.html	24 hours. 7 days. Real-time access over modem.
HP Support Assistant (CD-ROM)	A quarterly CD-ROM subscription service from HP. This online system provides technical information, product information and software drivers. This product is designed to run in a Microsoft Windows environment.	UK: (0800) 960274 Outside the UK: (+31) 55 384 2799	09:00 – 18:00 Weekdays
HP Fulfilment Service	Latest drivers.	UK: Tel: (01429) 865511 Fax: (01429) 866000 Outside the UK: Tel: (+44) 1429 865511 Fax: (+44) 1429 866000	

European Customer Support Center			
Resource	**Support provided**	**Phone number**	**Hours of operation**
HP Customer Support Center, Amsterdam, The Netherlands	Technical support with setup, and operation information.	Dutch (+31) 20 681 6473 English (+31) 20 682 8291 or 0891 391 000 French (+31) 20 681 8260 or 3670 39 49 German (+31) 20 681 7174 Italian (+31) 20 581 3318 Spanish (+31) 20 581 3319	M Tu Th F: 08:30–18:00 , Wednesday: 8:30–16:00

European Service Agreements		
Initiated ...	**Product**	**Details**
Within 30 days of purchase	HP Support-Pack	HP SupportPack is a three-year on-site service agreement which you can buy within 30 days of purchasing your plotter. With HP SupportPack, you can protect your investment and ensure its maximum availability. Your dealer can supply information about HP SupportPack, as well as a simple registration card.
After 30 days of purchase	Please contact your local HP Sales and Support office for details of other service agreements.	

European Response Centers			
Support provided	**Country**	**Phone number**	***fax number***
Technical support with repair information.	Netherlands	(+31) 20 547 9666	*(+31) 20 547 7750*
	United Kingdom	(+44) 1344 366366	*(+44) 1344 363344*
	France	(+33) 1 69 82 60 60	*(+33) 1 69 82 60 99*
	Germany	(+49) 2102 90 6143	*(+49) 2102 90 6300*
	Italy	(+39) 2 92 122 778	*(+39) 2 92 104 551*
	Spain	(+34) 1 631 16 01 /	*(+34) 1 631 18 30 or (+34) 1 631 18 31*
	Czech Republic	(+42) 2 4743 111 or (+42) 2 4717 321 /	*(+42) 2 471 76 11*
	Greece	(+30) 1 689 6503 or (+30) 1 689 6504	*(+30) 1 689 6508*
	Hungary	(+36) 1 252 4505 or (+36) 1 252 4705	*(+36) 1 252 7441*
	Poland	(+48) 22 37 50 65	*(+48) 22 37 47 83*
	Turkey	(+90) 212 224 59 37 or (+90) 212 246 78 47	*(+90) 212 233 93 49*
	Headquarters International Sales Branch (I.S.B.) / Middle East & Africa	(+41) 22 780 41 11	*(+41) 22 780 47 70*
	Denmark	(+45) 45 99 11 22	*(+45) 42 81 39 20*
	Austria	(+43) 1 25000 555	*(+43) 1 25000 500*
	Belgium	(+32) 2 778 38 00	*(+32) 2 778 30 43*
	Finland	(+358) 0 88721	*(+358) 0 887 2477*
	Norway	(+47) 22 73 56 01	*(+47) 22 75 56 10*
	Portugal	(+351) 1 301 73 44	*(+351) 1 301 63 32 or (+351) 1 301 63 33*
	Sweden	(+46) 8 444 23 20	*(+46) 8 444 25 20*
	Switzerland	(+41) 31 980 31 11	*(+41) 31 980 33 90*
	Europe	(+41) 22 780 81 11	*(+41) 22 780 85 42*

Hewlett-Packard support services in Asia-Pacific

Asia-Pacific Support Resources			
Resource	**Support provided and notes**	**Phone/fax/ftp number**	**Hours of operation**
HP FIRST Fax	Detailed product support information on common software applications and troubleshooting tips. All sent by fax.	Australia: (03) 9272 2627 Japan: (03) 3335 8622 Korea: (82-2) 769 0543 New Zealand: (09) 356 6642 PRC: (86-10) 505 5280 Singapore (65) 291 7951 Taiwan (886-2) 719 5589 Worldwide: (+1) (208) 344-4809	24 hours. 7 days. Automated support service.
HP Download Service (BBS: Bulletin Board Service))	Electronic downloading of HP product information, troubleshooting hints and updated HP plotter driver information.	Australia: (03) 9890 0276 New Zealand: (09) 356 3660 Taiwan (886-2) 923 3233 (login: hp password: bbs) Worldwide: (+1) (208) 344-1691	24 hours. 7 days. Real-time access over modem.
Internet	Information on products and plotter drivers for anyone with ftp access to the Internet, or who has Worldwide Web access through a hyper-media viewer such as Mosaic.	ftp to: 192.6.71.2, or ftp-boi.external.hp.com Name: anonymous Password: your e-mail address World-Wide Web: http://www-dmo.external.hp.com/peripherals/main.html	24 hours. 7 days. Real-time access over modem.
HP Support Assistant (CD-ROM)	A quarterly CD-ROM subscription service from HP. This online system provides technical information, product information and software drivers. This product is designed to run in a Microsoft Windows environment.	(65) 740 4629	24 hours 7 days

Asia-Pacific Support Resources (continued)			
Resource	**Support provided and notes**	**Phone/fax/ftp number**	**Hours of operation**
HP Fulfilment Service	Latest drivers.	Australia: Tel: (612) 565 6099 Fax: (612) 519 5631 Japan Tel: (03) 5346 1891 Korea Tel: (82-2) 3452 7677 New Zealand Tel: (02) 565 6099 Fax: (02) 519 5631 Singapore: Tel: (65) 740 4477 Fax: (65) 740 4499	
For telephone support in the Asia-Pacific region other than for those services listed above, contact your local HP dealer.			

Notes

Glossary

Number of units.

°C Degree(s) Celsius.

°F Degree(s) Fahrenheit.

A 1. Amp(s).
2. A pressure of one atmosphere, commonly used as a reference level in asessing sound pressure.

ac Alternating current.

accuracy calibration X-axis calibration.

addressable dpi A resolution higher than the nominal value of the cartridges, giving a finer grid on which the plotter can selectively position dots and improve print quality.

ASIC Application-Specific Integrated Circuit.

baud rate For the RS-232-C interface, the data transmission rate between the computer and the plotter (bits per second).

bidirectional print mode A print mode in which plotting is performed while the carriage is moving in either direction.

binding Obstruction to movement.

Bi-Tronics A parallel interface standard.

°C Degree(s) Celsius.

CAD Computer-Aided Design.

calib. Calibration.

CAM Computer-Aided Manufacturing.

carriage axis The axis along which the carriage moves. (Y-axis.)

carriage LED Line sensor.

cartridge Print cartridge (pen).

centronics A parallel interface standard.

checkout Of nozzles: testing of nozzles by firing them one by one.

checksum A programming method used to minimize data errors when data are transferred. ... (Part of a definition from *The Harper Collins Dictionary of Computer Terms,* © Ian R. Sinclair 1991.)

cm Centimeter(s).

Customer Engineers HP field support engineers.

D/A1-size plotters Models C3190A and C4694A.

data display Service monitor.

dB Decibel(s).

dc Direct current.

depletion The selective reduction of the number of drops placed on the media, in order to prevent an excess of ink on the media.

display data Service monitor.

display list An internal logical map, in swath format, containing data representing graphical objects.

DOS (MS-DOS.) MicroSoft Disk-Operating System.

dpi Dot(s) per inch, the plotter's resolution of raster images on the media.

DRAM Dynamic Random-Access Memory.

drive roller Platen roller.

drive-roller gear Helical gear at right-hand side of drive roller.

driver 1. An electronic circuit that provides input to another electronic circuit, (from *Webster's Ninth New Collegiate Dictionary,* © Merriam-Webster 1991).
2. Configuration data used by software to control input and output between the computer and the plotter.

DTR Data Terminal Ready.

duty cycle The amount of use a plotter should withstand without undue maintenance.

E/A0-size plotters Models C3191A and C4695A.

ECP Extended Capability Port. (A Bi-Tronics operating mode.)

EEROM Electrically Erasable Read-Only Memory.

electronics module The equivalent of the *electronics enclosure* of previous models in the DesignJet series. However, the electronics module is orderable as one part: you should not open it.

EPROM Erasable Programmable Read-Only Memory.

ESD Electrostatic discharge.

°**F** Degree(s) Fahrenheit.

film A type of media.

flow mode The plotting of images that have already been rasterized by computer software and do not need to be rasterized by the plotter itself.

ft foot/feet

halftoning The placement of dots to create a visual effect of different colors or different shades of gray.

helical gear Right-hand drive-roller gear.

HP Hewlett-Packard.

HP-GL Precursor of HP-GL/2.

HP-GL/2 Hewlett-Packard's standard graphics language for its plotters.

HP-RTL Hewlett-Packard Raster Transfer Language.

Hz Hertz.

IC Integrated Circuit.

IEEE Institute of Electrical and Electronics Engineers.

in Inch(es).

I/O Input/Output

IPA Isopropilic alcohol.

ips Inch(es) per second.

K Kilobyte(s)

Kana-8 A Japanese character set.

Kanji A Japanese character set.

Kbyte Kilobyte

kg Kilogram(s).

Kg Kilogram(s).

LAN Local Area Network.

lb Pound(s).

LED Light-Emitting Diode.

line sensor Carriage LED.

m Meter(s)

margin Part of the media on which the plotter is incapable of printing.

Mbyte Megabyte.

media (Used instead of medium.) The material on which the graphics are plotted: paper, translucent material, vellum, film, or special paper.

media axis The axis along which the media moves. (X-axis; paper axis.)

media jam A situation in which media becomes blocked in the plotter mechanisms.

media-jam lever Pinch-arm lever.

media-length calibration Media-sensor calibration.

media-sensor calibration Media-length calibration.

mil 1/1000 of an inch.

minimum pass time The time necessary for ink to dry sufficiently before the plotter can place more ink adjacent to it.

MIO Modular Input/Output.

mm Millimeter(s).

monitor mode Service monitor.

MS-DOS MicroSoft Disk-Operating System

no negative motion An RTL command that indicates to the plotter that it will receive all data already in the order in which it should be plotted.

off-axis ink system A system whereby ink is pumped to the cartridges from a reservoir that does not move with the carriage.

PAL Programmable Array Logic.

palette A set of pens for which width and % shading are defined using the setup sheet or the graphics software.

paper axis Media axis (X-axis).

parity An error-checking method for information transfer between a computer and a peripheral device. Parity is used to check the accuracy of binary data.

pass A movement of the carriage from left to right, or from right to left, as it plots the graphic.

pass advance The distance that the media advances between carriage passes.

PC Personal Computer.

PCA Printed Circuit Assembly.

pen 1. Even though the inkjet plotter has no physical pens, the lines it draws match the attributes for pens numbered 1 through 8 in the application software. (See also “palette.”)
2. Sometimes used instead of “print cartridge.”

pinch-arm lever Pinch-wheel lever, media-jam lever.

PJL Printer Job Language, developed by Hewlett-Packard to give software applications more job-level device control and to provide device status information to the application.

platen roller Drive roller.

plot quality Print quality.

PML Printer Management Language.

P/N Part Number.

power cycle The switching of the plotter off and then on again.

primary colors cyan, magenta, yellow, black.

print quality Plot quality

Product Line 30 Hewlett-Packard's product line of large-format, pen and thermal-inkjet plotters.

PWM Pulse-Width Modulation.

RAM Random-Access Memory.

raster 1. A matrix of dots, or pixels, where each pixel is defined by a bit. A bit that is "on" will print a dot on the paper. A bit that is "off" will leave the area blank.
2. A method for defining a plot directly in terms of the pixels rather than as vectors.

raster image processor Software that converts graphics data to pixel format.

relative humidity The ratio of the amount of water vapor actually present in the air to the greatest amount possible at the same temperature, (from *Webster's Ninth New Collegiate Dictionary*, © Merriam-Webster 1991).

resolution A measure of image sharpness expressed as a number of lines per unit length. When referring to plotters, addressable resolution means the smallest move the plotter can make programmatically.

rms Root mean square.

ROM Read-Only Memory.

roman A character set based on the Latin alphabet.

RS-232-C interface A serial interface standardized by the Electronic Industries Association Standard RS-232-C.

RTL see "HP-RTL."

SFIBIS An ASIC

SCondor An ASIC

sec Second(s).

secondary colors Red, blue, green.

service monitor Data display; display data; monitor mode.

SIMM Single In-line Memory Module.

skew Misalignment.

special paper A paper specifically developed by HP, for HP inkjet plotters.

SPROC Servo-Processor Code.

swath That portion of a drawing plotted between advances of the drive roller in **Fast** mode. (In **Best** mode, the drive roller advances half a swath at a time; in **Normal** mode, it may advance a full swath or half a swath, depending on whether the plot is color or monochrome.)

TCP/IP Transmission Control Protocol / Internet Protocol.

theta-Z error A print-quality error caused when the nozzles on a cartridge are not perpendicular to the carriage axis. The error shows up as jagged vertical lines.

translucent Describes a type of media through which light passes.

UART Universal Asynchronous Receiver Transmitter.

unidirectional print mode A print mode in which plotting is performed while the carriage moves in one direction, and no plotting is performed while the carriage moves in the opposite direction.

vellum A type of strong paper.

VLS Vertical-line straightness.

X-axis Media axis.

X-axis calibration Accuracy calibration.

Y-axis Carriage axis.

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About This Edition

This is the second edition of this service manual. It updates information in respect to the HP DesignJet 750C and 755CM and introduces the HP DesignJet 700 and 750C *Plus*.

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HEWLETT PACKARD

What's in This Book

This manual contains information necessary to test, calibrate and service

- HP DesignJet 700 plotters (models C4705A and C4706A)
- HP DesignJet 750C plotters (models C3195A and C3196A)
- HP DesignJet 750C *Plus* plotters (models C4708A and C4709A)
- HP DesignJet 755CM printers (models C3198A and C3198B)

For information about using these plotters, refer to the corresponding user and quick-reference guides.

The procedures described in this manual are to be performed by HP-qualified service personnel only.

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